Study Report

P3-C1-010

DARWIN EU® - Incidence of suicidality in patients with specific chronic skin conditions

09/12/2024

Version 2.0

Contents

Study Title	DARWIN EU® - Incidence of suicidality in patients with specific chronic skin conditions
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Research question and objectives	Research questions: What are the background incidence rates of suicidality-related events (completed suicide, attempted suicide, suicide ideation, and intentional self-harm) in patients with acne and psoriasis and in the general population, overall and stratified by sex, age categories, calendar year, and in individuals with or without history of mental health disorders? Objectives: 1. To assess the background incidence rates of suicidality-related events in patients with acne, overall and stratified by sex, age categories, calendar year, and in individuals with or without history of mental health disorders 2. To assess the background incidence rates of suicidality-related events in patients with psoriasis, overall and stratified by sex, age categories, calendar year, and in individuals with or without history of mental health disorders 3. To assess the background incidence rates of suicidality-related events in the general population, overall and stratified by sex, age categories, calendar year, and in individuals with or without history of mental health disorders
Countries of study	United Kingdom, the Netherlands, Spain, Croatia
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1. DESCRIPTION OF STUDY TEAM

Study team role	Names	Organisation
Study Project Managers/Principal Investigators	Marzyeh Amini Katia Verhamme	Erasmus MC
Data Scientists	Adam Black Ross Williams	Erasmus MC
Clinical Epidemiologist/ Clinical Domain Expert	Katia Verhamme Guido van Leeuwen	Erasmus MC
Data Analyst	Adam Black	Erasmus MC
Data Partner*	**Names**	**Organisation**
CPRD GOLD	Antonella Delmestri	University of Oxford
IPCI	Katia Verhamme	Erasmus MC
NAJS	Jakov Vuković Ivan Pristaš Anamaria Jurčević Marko Čavlina Antea Jezidžić Pero Ivanko	Croatian National Institute of Public Health
SIDIAP	Talita Duarte-Salles Anna Palomar Agustina Giuliodori Picco	IDIAPJGol
VID	Gabriel Sanfélix Francisco Sanchez-Saez	Valencia Health System Integrated Dataset

*Data partners' role is only to execute code at their data source, review and approve their results. These people do not have an investigator role.

2. DATA SOURCES

This study was conducted using routinely collected data from 5 primary and secondary care data sources in 4 European countries. All data were a priori mapped to the OMOP CDM.

1. Clinical Practice Research Datalink (CPRD GOLD), United Kingdom
2. The Integrated Primary Care Information (IPCI), the Netherlands
3. Croatian National Public Health Information System (NAJS), Croatia
4. Information System for Research in Primary Care (SIDIAP), Spain
5. Valencia Health System Integrated Dataset (VID), Spain.

Detailed information on data sources is described in **Table 1**.

Table 1. Description of databases used for this study and ability to answer objectives.

Country	Name of Database	Health Care setting (e.g. primary care, specialist care, hospital care)	Type of Data (EHR, claims, registries)	Number of active subjects	Data lock for the last update	Ability to answer study objectives
United Kingdom	CPRD GOLD	PC and information on specialist/hospital discharge	EHR	17 million	01/01/2024	1,2, and 3
The Netherlands	IPCI	PC	EHR	2.9 million	30/04/2024	1,2, and 3
Croatia	NAJS	PC, outpatient specialist care and inpatient care	Registries	5.4 million	17/11/2023	1,2, and 3
Spain	SIDIAP	PC and information on hospital discharge	EHR	8.5 million	30/06/2023	1,2, and 3
Spain	VID	PC, outpatient specialist care and inpatient care	EHR and registries	2 million	01/01/2022	1,2, and 3

CPRD= Clinical Practice Research Datalink, IPCI= The Integrated Primary Care Information, NAJS= Croatian National Public Health Information System, SIDIAP= Information System for Research in Primary Care, VID= Valencia Health System Integrated Dataset, PC= primary care, EHR= Electronic Healthcare Records

3. ABSTRACT

Title

DARWIN EU® - Incidence of suicidality in patients with specific chronic skin conditions

Rationale and background

Chronic skin conditions like acne and psoriasis cause significant physical and psychological distress, leading to social stigmatisation and an increased risk of mental health issues, including depression and anxiety.

Concerns about their link to suicidality-related events are rising. Several safety signals of suicidal ideation potentially associated with treatments for acne and/or other skin disorders have been raised. For these signals, it is difficult to estimate the extent of the confounding by indication since there is insufficient data in the literature regarding the background rates of such outcomes in these populations and most studies focus on broader mental health outcomes. This study aimed to estimate background rates of suicidality-related events in population with skin conditions, with and without a history of mental health disorders. Understanding of the background rate of these events in patients with these conditions and the extent to which this differs from the general population will aid in the assessment of future safety signals.

Research questions

What are the background incidence rates of suicidality-related events (completed suicide, attempted suicide, suicidal ideation, and intentional self-harm) in patients with acne and psoriasis and in the general population, overall and stratified by sex, age categories, a medical history of mental health

disorders, and by calendar year?

Objectives

1. To assess the incidence rate of suicidality related events in *patients with acne* stratified by sex, age category (12- <18 years, 18-30, 31-40, 41-50, etc, >=81 years), calendar year, and history of mental health disorders.
2. To assess the incidence rate of suicidality related events in *patients with psoriasis* stratified by sex, age category (12- <18 years, 18-30, 31-40, 41-50, etc, ≥81 years), calendar year, and history of mental health disorders
3. To assess the incidence rate of suicidality related events in *the general population* stratified by sex, age category (12- <18 years, 18-30, 31-40, 41-50, etc, ≥81 years), calendar year, and history of mental health disorders

Research methods

Study design

Population level cohort study

Population

The study population included all individuals present in the database during the study period (2010 to the most recent data available) and with at least one year of database history.

Within this population, 2 sub-cohorts were nested namely, one of individuals newly diagnosed with acne and one of individuals newly diagnosed with psoriasis.

Individuals with a history of attempted suicide, suicidal ideation and intentional self-harm were not excluded from the study, but results were stratified by presence of a medical history of mental health disorders prior to start of follow-up.

Variables

Outcomes

Outcomes of interest were i) completed suicide (condition record of suicide plus death date in the following 30 days), ii) attempted suicide, iii) suicidal ideation, iv) intentional self-harm, v) composite outcome (presence of any of the above-mentioned events), vi) suicide-related events (i.e. completed suicide, attempted suicide, and suicidal ideation).

Relevant covariates

Sex, age, calendar year, and presence (yes/no) medical history of mental health disorders (i.e. anxiety, depression, bipolar disorder, post-traumatic stress disorder, eating disorders, and psychotic disorders).

Data sources

1. Clinical Practice Research Datalink (CPRD GOLD), United Kingdom
2. The Integrated Primary Care Information (IPCI), the Netherlands
3. Information System for Research in Primary Care (SIDIAP), Spain
4. Valencia Health System Integrated Dataset (VID), Spain
5. Croatian National Public Health Information System (NAJS), Croatia

Analytical methods

Yearly incidence rates of suicide-related events per 100,000 person-years were estimated in the acne, psoriasis, and the general population. The denominator was determined by summing the total time of each

individual diagnosed with conditions of interest in the study population. Yearly incidence rates were reported overall and stratified by sex, age category, calendar year, and by presence (yes/no) of a medical history of mental health disorders when possible (minimum cell count reached). The statistical analyses were performed based on OMOP-CDM mapped data using "*IncidencePrevalence*" R package.

Results

In the general population, completed suicide data was reported for CPRD and IPCI, with 142 and 797 cases, respectively. Suicide attempts were most prevalent recorded in databases. Suicidal ideation was notably high in CPRD Gold but less common in other databases. Intentional self-harm was also most frequently recorded in CPRD Gold. The proportion of females ranged widely, from 28.5% for completed suicides (CPRD Gold) to 64.5% for suicide attempts (SIDIAP). Median ages varied between data sources and outcomes spanning late 20s to mid-40s.

Incidence rates of suicidality-related outcomes were higher in individuals with acne compared to individuals with psoriasis or the general population, in all databases and across all calendar years. Composite suicide rates in individuals with acne ranged widely across databases over years 2010-2024: 258.9-363.6/100,000 PYs (CPRD Gold), 56.0-126.5 (IPCI), 34.0-77.1 (NAJS), 32.1-161.9 (SIDIAP), and 143.5-337.7 (VID). In individuals with psoriasis, the incidence rates over years were 166.7-264.8/100,000 PYs (CPRD Gold), 30.9-104.3 (IPCI), 33.9-70.1 (NAJS), 40.7-111.5 (SIDIAP), 129.4-299.5 (VID). In the general population, the incidence rates per 100,000 PYs ranged between 146.7-212.6 (CPRD Gold), 49.9-63.8 (IPCI), 26.9-49.3 (NAJS), 15.2-95.0 (SIDIAP), and 130.8-209.3 (VID).

The incidence rates of composite suicide outcome were highest in younger age groups (12–17 and 18–30 years) across all populations and databases, particularly in CPRD Gold and SIDIAP, with rates decreasing with age. In the acne population, CPRD Gold showed rates of 481.9/100,000 PYs (12–17 years) and 294.1 (18–30 years), with SIDIAP reporting 137.8/100,000 PYs (12–17 years) and 81.4 (18–30 years). In the psoriasis population, CPRD Gold recorded rates of 910.8/100,000 PYs (12–17 years) and 387.7 (18–30 years), and SIDIAP reported 124.3/100,000 PYs (18–30 years). Females consistently exhibited higher incidence rates than males across populations. In CPRD Gold, females in the acne population had rates of 335.6/100,000 PYs compared to 306.8 for males, while in the psoriasis population, rates were 215.4 for females versus 208.5 for males. Similar trends were observed for other outcomes of suicide-related events, suicide attempt, suicide ideation, and intentional self-harm, influenced by both age group and sex.

Individuals with previous mental health disorders had higher rates of composite suicide outcome, especially those with acne, reaching about 800 per 100,000 person-years (PYs) in the CPRD Gold database. In contrast, those without prior mental health disorders had lower rates (below 300 per 100,000 PYs). In the SIDIAP database, both groups showed a steady increase in incidence rates over time, with a sharper rise in those with prior mental health disorders, reaching 400 per 100,000 PYs. Other databases showed sparser data with generally lower rates in those without mental health disorders. Similar patterns were observed for other outcomes of suicide-related events, suicide attempts, suicidal ideation, and intentional self-harm with consistently higher rates in individuals with prior mental health disorders and the acne population compared to the psoriasis and general populations.

Conclusion

In this disease epidemiology of suicidality-related events in patients with acne, psoriasis, and in the general population in UK, the Netherlands, Spain, and Croatia we observed that the acne population consistently exhibited higher incidence rates of suicidality-related outcomes, particularly among younger females, when compared to both the psoriasis and general populations. The incidence rates of suicidality related events in psoriasis population were also higher than the general population. The incidence rates for suicidality-related outcomes were notably elevated in individuals with prior mental health disorders, especially within the acne cohort.

4. LIST OF ABBREVIATIONS

Acronyms/term	Description
CC	Coordinating Centre
CDM	Common Data Model
COVID-19	Coronavirus Disease-2019
CPRD	Clinical Practice Research Datalink
DARWIN EU®	Data Analysis and Real-World Interrogation Network
DOI	Declaration of Interests
DRE	Digital Research Environment
EHR	Electronic Health Records
EMA	European Medicines Agency
ENCePP	European Network of Centres for Pharmacoepidemiology and Pharmacovigilance
EU	European Union
GDPR	General Data Protection Regulation
GP	General Practitioner
ICD	International Classification of Diseases
ICPC-1	International Classification of Primary Care
IP	Inpatient
IPCI	Integrated Primary Care Information
IQR	Interquartile Range
NAJS	Croatian National Public Health Information System
OHDSI	Observational Health Data Sciences and Informatics
OMOP	Observational Medical Outcomes Partnership
OP	Outpatient
PTSD	Post Traumatic Stress Disorder
RRE	Remote Research Environment
RxNorm	Medical Prescription Normalized
SD	Standard Deviation
SIDIAP	Information System for Research in Primary Care
SNOMED	Systematized Nomenclature of Medicine
VID	Valencia Health System Integrated Database
WONCA	World Organization of Family Doctors

5. AMENDMENTS AND UPDATES

None.

6. MILESTONES

Study deliverable	Timeline (planned)	Timeline (actual)
Draft Study Protocol	July 2024	11/07/2024
Final Study Protocol	August 2024	20/08/2024
Creation of Analytical code	September 2024	18/09/2024
Execution of Analytical Code on the data	September 2024	15/10/2024
Draft Study Report	31st October 2024	11/11/2024
Final Study Report	December 2024	09/12/2024

7. RATIONALE AND BACKGROUND

Chronic skin conditions like acne and psoriasis cause significant physical and psychological distress. The visible nature of these conditions often affecting self-esteem, leading to feelings of shame and social isolation, a decreased quality of life, and an increased risk of psychiatric comorbidities, including depression and anxiety.(1-5) Increasingly, there are concerns these factors collectively increase the risk of suicidality-related events of suicidal thoughts and behaviours in this patient population.(6-9) Several studies have noted signals of suicidal ideation associated with treatments for acne and other skin disorders. However, it remains difficult to determine whether these observations are due to the medication itself or the conditions they treat, which is already associated with significant psychological burden. This gap in knowledge hampers the ability to accurately assess the risk of suicide-related events linked to specific treatments. For example, doxycycline, a tetracycline antibiotic, a commonly prescribed for treatment of acne (10) has been the subject of much debate about the potential neuropsychiatric side effects of doxycycline, particularly regarding suicidality, including suicidal ideation, attempts, and completed suicide.(11-14)

Suicide, or suicidality, is also multifactorial and has been associated with factors such as socioeconomic status, unemployment, cultural and ethnic differences, and psychiatric disorders. Conceptually, suicidality is divided into categories: suicidal ideation (thoughts of engaging in behaviour intended to end one's life), suicide attempt (self-injurious behaviour with at least some intention to end one's life), and completed suicide (the act of intentionally ending one's life).(5) Suicidal ideation and behaviour are significant public health concerns, with nearly one million people worldwide dying by suicide each year.(5) According to recent data, suicide rates in Europe were significantly higher than the global average in 2019, despite a notable reduction over the past two decades.(15)

Recently, several studies have been published on chronic skin conditions and suicidality especially on psoriasis. However, the findings are often inconsistent, and clinically relevant distinctions between suicidal ideation, suicide attempts, and completed suicide are sometimes not made or only partially addressed. The knowledge on the background rates of suicidality in patients with chronic skin conditions is crucial for developing comprehensive treatment plans that address both the physical and psychological needs of patients with chronic skin conditions.(16, 17)

This study is intended to assess the incidence rate of suicidality in patient with chronic skin conditions of acne and psoriasis and the extent to which this differs from the general population. The understanding of background rates will further aid in the assessment of safety signals occurring in relation to treatments for these conditions.

8. RESEARCH QUESTION AND OBJECTIVES

The proposed objectives to be achieved in the study are described in **Table 2**.

Table 2. Primary and secondary research questions and objective.

A. Primary research question and objectives.

Objectives:	1. To assess the incidence rate of suicidality related events in *patients with acne* stratified by sex, age category, by calendar year, and in individuals with or without a history of mental health disorders. 2. To assess the incidence rate of suicidality related events in *patients with psoriasis* stratified by sex, age category, by calendar year, and in individuals with or without a history of mental health disorders. 3. To assess the incidence rate of suicidality related events in *the general population* stratified by sex, age category, by calendar year, and in individuals with or without a history of mental health disorders.
Hypothesis:	n/a
Population *(mention key inclusion-exclusion criteria):*	The study population included all individuals older than 12 years present in the database during the study period (2010 to the most recent data available) and with at least one year of database history. Within this population two sub-cohorts were nested namely one of individuals newly diagnosed with acne and one consisting of individuals newly diagnosed with psoriasis. Individuals with a history of attempted suicide, suicidal ideation and intentional self-harm prior to the study start were not excluded from the study but results were provided overall and stratified by presence of medical history of these mental health disorders.
Exposure:	n/a
Comparator:	n/a
Outcome:	Outcomes of interest were i) completed suicide, ii) attempted suicide, iii) suicidal ideation, iv) intentional self-harm, v) composite outcome (combination of any of the above-mentioned events), and vi) suicide-related events (i.e. completed suicide, attempted suicide, suicidal ideation).
Time *(when follow up begins and ends):*	Objectives 1-2: Follow-up started on 1st January of 2010, the date of acne and/or psoriasis diagnosis, or date of 365 days of database

	history whichever came last until the earliest date of the study outcome of interest, death, end of observation period or end of data availability of data source whichever came first. Objective 3: Follow-up began on January 1st January of 2010, or date of 365 days of database history whichever came last until the earliest date of the study outcome of interest, death, end of observation period or end of data availability of data source whichever came first.
Setting:	Outpatient setting using data from the following 5 data sources: CPRD GOLD (UK), IPCI (the Netherlands), SIDIAP (Spain), VID (Spain), NAJS (Croatia)
Main measure of effect:	Incidence rates of suicidality-related events (with 95% confidence intervals)

9. RESEARCH METHODS

9.1 Study type and study design

We performed a population-level disease epidemiology study classified as "*off-the-shelf*" and as described in the DARWIN EU® Complete Catalogue of Standard Data Analyses (**Table 3**). The incidence rates of suicidality-related events in patients with acne and in patients with psoriasis were described and compared to the general population, overall and stratified by sex, age categories, and calendar year. Further on, results were stratified in individuals with and individuals without a history of mental health conditions at start of follow-up.

Table 3. Description of potential study type and related study design.

Study type	Study design	Study classification
Population-level descriptive epidemiology	Population-level cohort	Off-the-shelf

9.2 Study setting and data sources

This study was conducted using routinely collected data from 5 primary and secondary care data sources in 4 European countries. All data were a priori mapped to the OMOP CDM.

1. Clinical Practice Research Datalink (CPRD GOLD), United Kingdom
2. The Integrated Primary Care Information (IPCI), the Netherlands
3. Croatian National Public Health Information System (NAJS), Croatia
4. Information System for Research in Primary Care (SIDIAP), Spain
5. Valencia Health System Integrated Dataset (VID), Spain

The selection of databases for this study was performed based on data reliability, availability of the study variables, and relevance for the proposed research question among those databases onboarded and available within DARWIN EU®.

The selected databases fulfil the criteria required for the availability of key information on outcomes, and covariates, while covering different settings and regions of Europe. Outpatient setting complemented with

hospitalisations, was the preferred setting for this study as patient with chronic skin conditions are treated almost exclusively in this setting. Similarly, it is expected that the outcome should be captured as well, especially in databases that have information on hospital admissions.

Detailed information on data sources is described in **Table 1**.

Clinical Practice Research Datalink GOLD, United Kingdom (University of Oxford)

The Clinical Practice Research Datalink (CPRD) GOLD is a database of anonymised electronic health records (EHR) from General Practitioner (GP) clinics in the UK that use the Vision® software system for their management.(18) The source population encompasses 98% of the UK, registered with GPs responsible for non-emergency care and referrals. Participating GPs provide CPRD EHR for all registered patients who did not specifically request to opt out of data sharing. Covering 4.6% of the current UK population, GOLD includes 4.9% of contributing GP practices, providing comprehensive information within its defined source population. GOLD contains data from all four UK constituent countries and the current regional distribution of its GP practices is 5.7% in England, 55.6% in Scotland, 28.4% in Wales, and 10.2% in Northern Ireland (May 2022).

GOLD data include patient's demographic, biological measurements, clinical symptoms and diagnoses, referrals to specialist/hospital and their outcome, laboratory tests/results, and prescribed medications. GOLD has been assessed and found broadly representative of the UK general population in terms of age, gender, and ethnicity.(18) GOLD has been widely used internationally for observational research to produce nearly 3,000 peer-reviewed publications, making GOLD the most influential UK clinical database so far.(19-21).

In terms of quality checks, the integrity, structure and format of the data is reviewed. Collection-level validation ensures integrity by checking that data received from practices contain only expected data files and ensures that all data elements are of the correct type, length and format. Duplicate records are identified and removed.(18) Transformation-level validation checks for referential integrity between records ensure that there are no orphan records included in the database (for example, that all event records link to a patient), while research-quality-level validation covers the actual content of the data. CPRD provides a patient-level data quality metric in the form of a binary 'acceptability' flag.(18) This is based on recording and internal consistency of key variables including date of birth, practice registration date and transfer out date.

The Integrated Primary Care Information (IPCI), the Netherlands

The Integrated Primary Care Information (IPCI) database is a longitudinal observational database containing routinely collected data extracted from computer-based patient records of a selected group of general practitioners (GPs) across the Netherlands.(22) IPCI was started in 1992 by the department of Medical Informatics of the Erasmus University Medical Centre in Rotterdam. The current database includes patient records from 2006 on, when the size of the database started to increase significantly. The demographic composition of the IPCI population mirrors that of the general Dutch population in terms of age and sex. Although the geographical spread is limited, GP practices are located in urban and non-urban areas.

Patient-level data includes demographic information, patient's complaints and symptoms, diagnoses, laboratory test results, lifestyle factors and correspondence with secondary care, such as referral and discharge letters. For complaints, symptoms and diagnoses, Dutch GPs use International Classification of Primary Care (ICPC-1) coding, an international standard developed and updated by the World Organization of Family Doctors' (WONCA) International Classification Committee.

IPCI data quality has been previously documented and IPCI has proved valuable for epidemiological studies.(23-27) In terms of quality control, extensive quality control steps are performed prior to each data

release. These include comparison of patient characteristics between practices and checks to identify abnormal temporal data patterns in practices. Additional checks include over 200 indicators related to population characteristics (e.g. reliability of birth and mortality rates) and medical data (e.g. availability of durations of prescriptions, completeness of laboratory results, availability of hospital letters and prescriptions, proportion of patients with blood pressure measurement, etc).(22) Based on this information, two quality scores have been created. Practices with low scores have been excluded.

Croatian National Public Health Information System (NAJS), Croatia

The National Public Health Information System (Nacionalni javnozdravstveni informacijski sustav - NAJS) is an organised system of information services by the Croatian Institute of Public Health (CIPH). This database was established in 1998, with nationwide coverage, representing approximately 5.4 million inhabitants. Settings covered include public primary, secondary/outpatient, and inpatient care. Data is retrieved primarily from EHR and holds information on demographics, inpatient and outpatient visits, conditions and procedures, drugs (outpatient and inpatient prescriptions), measurements, and inpatient and outpatient dates of death. NAJS provides linkage between medical and public health data collected and stored in health registries and other health data collections, including cancer registry, mortality, work injuries, occupational diseases, communicable and non-communicable diseases, health events, disabilities, psychosis and suicide, diabetes, drug abuse and others. The CDM population comprises all publicly insured persons residing in Croatia starting in 2015.

Information System for Research in Primary Care (SIDIAP), Spain

The Information System for Research in Primary Care (SIDIAP) is a dynamic database of pseudo-anonymized electronic health records of the primary care patient population in Catalonia, Spain.(28) It contains data of approximately 80% of the Catalan population registered in over 280 primary care practices throughout Catalonia since 2005.

The database contains data recorded in primary care centres on a daily basis. Additionally, it integrates data from external sources including biomarkers data from laboratories and records of drug prescription and dispensation. The dataset covers demographics, all-cause mortality, disease diagnoses classified under the International Classification of Diseases 10th revision (ICD-10), prescription and dispensation records of drugs, results of laboratory tests, socio-economic indicators, vaccination records, lifestyle information, parent–child linkage and various clinical parameters. Additional data from other data sources such as hospital discharges, mental health centres or specific disease registries can be obtained through diverse linkages. The demographic composition within SIDIAP closely mirrors that of the broader Catalan population, encompassing a representative spectrum of geographic distribution, age, and sex proportions. The database is updated every 6 months.

SIDIAP data quality has been previously documented and SIDIAP has proved valuable for epidemiological studies.(29-38) In terms of data integrity and reliability, SIDIAP has been subject to rigorous evaluation. Quality checks have been implemented including central identification of duplicate patient ID and visual inspection for temporal patterns in the registry of a certain variable. Furthermore, the data undergoes assessment for availability (longitudinally and reliability), plausibility (range checks and unusual values) and consistency using visualization tools. Specifically, for biochemistry data, consistency for measurements taken in different laboratories is assessed, and unit conversion is undertaken when needed.

Valencia Health System Integrated Dataset (VID), Valencia, Spain

The Valencia Health System Integrated Dataset (VID) is a set of multiple, public, population-wide electronic databases for the Valencia Region, the fourth most populated Spanish region, with about 5 million inhabitants and an annual birth cohort of 48 000 newborns, representing 10.7% of the Spanish population

and around 1% of the European population. The VID provides exhaustive longitudinal information, including sociodemographic and administrative data (sex, age, nationality, etc.), clinical (diagnoses, procedures, diagnostic tests, imaging, etc.), pharmaceutical (prescription, dispensing) and healthcare utilisation data from hospital care, emergency departments, specialised care (including mental and obstetrics care), primary care and other public health services. It also includes a set of associated population databases and registries of significant care areas such as cancer, rare diseases, vaccines, congenital anomalies, microbiology (including COVID-19 test results registry), and public health databases from the population screening programmes. All the information in the VID databases can be linked individually through a single personal identification code. The databases were initiated at different times, but overall, the VID provides comprehensive individual-level data fed by all the databases from 2008 to 2022. This database only includes data of women aged 12-55 years, which is the data they have currently mapped and is readily available for study purposes.

9.3 Study period

The study period was from 1st January of 2010 to the most recent data available for each contributing data source as provided in **Table 1**.

9.4 Follow-up

Follow up for Objectives 1-2 started on 1st January of 2010, the date of new diagnosis of acne (objective 1) or the date of new diagnosis of psoriasis (objective 2) or 365 days of database history whichever came last until the earliest date of the study outcome of interest, death, or end of observation period (the most recent data available) in the database.

Follow-up for Objective 3 started on January 1st January of 2010, or 365 days of prior history and continued until the earliest of the following: loss to follow-up, death, or end of observation period (the most recent data available) in the database.

Operational definitions on index date are specified in **Table 4**.

Table 4. Operational definition of time 0 (index date) and other primary time anchors.

Study population name(s)	Time Anchor Description (e.g. time 0)	Number of entries	Type of entry	Washout window	Care Setting[1]	Code Type	Diagnosis position	Incident with respect to…	Measurement characteristics/ validation	Source of algorithm
Individuals with incident acne (objective 1)	Date of newly diagnosis of acne during follow-up	Single entry	Incident	Any time prior to study entry date	OP	Clinical finding, time	n/a	Prior acne diagnosis	n/a	n/a
Individuals with incident psoriasis (objective 2)	Date of newly diagnosis of psoriasis during follow-up	Single entry	Incident	Any time prior to study entry date	OP	Clinical finding, time	n/a	Prior psoriasis diagnosis	n/a	n/a
General population (Objective 3)	1st January 2010 or date on which individuals older than 12 years had 365 days of database history whichever came last	Single entry	General population	n/a	OP	Time of fulfilling inclusion criteria	n/a	n/a	n/a	n/a

[1] OP = outpatient, n/a = not applicable

The incidence estimation required an appropriate denominator population with observation time to first be identified. Study participants in the denominator population began contributing person time at risk as described in the follow up section.

An example of entry and exit into the denominator population is shown in Error! Reference source not found.. In this example, person ID 1 already has sufficient prior history before the study start date and the observation period ended after the study end date, so this person contributed during the complete study period. Person IDs 2 and 4 entered the study only when they had sufficient prior history. Person ID 3 left when exiting the database (the end of the observation period). Lastly, person ID 5 had two observation periods in the database. Only the first observation period was considered, contributing time from the study start until the end of the initial observation period.

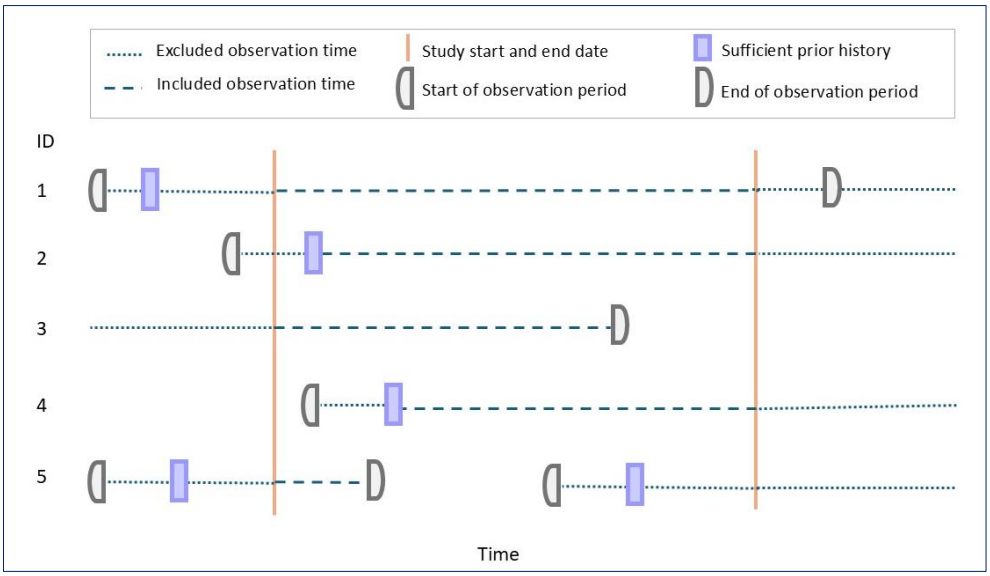


Figure 1. Included observation time for the denominator population.

9.5 Study population with inclusion and exclusion criteria

The study population included all individuals older than 12 years observed in one of the participating data sources during the study period (01/01/2010 up to the last date of available date). Study participants were required to have at least 365 days of prior history before contributing observation time. This was to ensure a minimum prior observation time to identify history of mental history, acne and/or psoriasis and to identify a history of any of the outcomes of interest at the time at which a participant entered the study.

Within this population, two sub-cohorts were nested: one comprising individuals newly diagnosed with acne and the other consisting of individuals newly diagnosed with psoriasis.

The concept definitions of acne and psoriasis are described in **Appendix I. Table S 1**.

The operational definitions of the inclusion and exclusion criteria are presented in **Table 5** and **Table 6**, respectively.

Table 5. Operational definitions of inclusion criteria.

Criterion	Details	Assessment window	Care Settings[1]	Code Type	Diagnosis position	Applied to study populations:	Measurement characteristics/ validation	Source for algorithm
Observation period in the database during the period 2010-up to the most data available	All individuals older than 12 years present in the period from 2010 until the most recent data available	n/a	OP	n/a	n/a	All cohorts	n/a	n/a
Prior database history of one year	Study participants were required to have a year of prior history observed before contributing observation time	[-365, -1]	OP	n/a	n/a	All cohorts	n/a	n/a
Acne	Diagnosis record of acne	Any time prior	OP	SNOMED	n/a	Acne cohort	n/a	n/a
Psoriasis	Diagnosis record of psoriasis	Any time prior	OP	SNOMED	n/a	Psoriasis cohort	n/a	n/a

[1] OP = outpatient, n/a = not applicable

Table 6. Operational definitions of exclusion criteria.

Criterion	Details	Order of application	Assessment window	Care Settings[1]	Code Type	Diagnosis position	Applied to study populations:	Measurement characteristics/ validation	Source for algorithm
n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

9.6 Variables

9.6.1 Exposure /s

None.

9.6.2 Outcome/s

The outcomes of interest for the acne and/or psoriasis cohort as well as for the general population cohort were as follows:

- Completed suicide (observation record of suicide plus death date in the following 30 days)
- Attempted suicide
- Suicidal ideation
- Intentional self-harm
- Composite outcome (combination of any of the above-mentioned events)
- Suicide-related events (i.e. completed suicide, attempted suicide, suicidal ideation)

The list of codes for identifying the outcomes of interest are available in **Appendix I. Table S 1**.

The operational definition of the outcomes is presented in **Table 7.**

Table 7. Operational definitions of outcome.

Outcome name	Details	Primary outcome?	Type of outcome	Washout window	Care Settings[1]	Code Type	Diagnosis Position	Applied to study populations	Measurement characteristics/validation	Source of algorithm
Completed suicide	Observation record of completed suicide	Yes	Binary	[-inf , -1]	OP	SNOMED	n/a	All cohorts	n/a	n/a
Suicide attempt	Condition/observation record of suicide attempt	Yes	Binary	[-inf , -1]* No wash out was applied for events occurring before index date	OP	SNOMED	n/a	All cohorts	n/a	n/a
Suicidal ideation	Condition/observation record of suicidal ideation	Yes	Binary	[-inf , -1]* No wash out was applied for events occurring before index date	OP	SNOMED	n/a	All cohorts	n/a	n/a
Intentional self-harm	Condition/observation record of intentional self-harm	Yes	Binary	[-inf , -1]* No wash out was applied for events occurring before index date	OP	SNOMED	n/a	All cohorts	n/a	n/a

Outcome name	Details	Primary outcome?	Type of outcome	Washout window	Care Settings[1]	Code Type	Diagnosis Position	Applied to study populations	Measurement characteristics/validation	Source of algorithm
Composite outcome	Condition/observation record of any events of completed suicide, attempted suicide, suicidal ideation, and intentional self-harm	Yes	Binary	[-inf , -1]* No wash out was applied for events occurring before index date	OP	SNOMED	n/a	All cohorts	n/a	n/a
Suicide-related events	Condition/observation record of suicidal ideation, attempted suicide, completed suicide	Yes	Binary	[-inf , -1]* No wash out was applied for events occurring before index date	OP	SNOMED	n/a	All cohorts	n/a	n/a

[1] OP = outpatient, n/a = not applicable

* Infinite wash out was applied which means we included only incident cases; however, patients with a medical history of three outcomes (i.e. suicide attempt, suicide ideation, and intentional self-harm) before index date were allowed to remain in the cohort.

9.6.3 Other covariates, including confounders, effect modifiers and other variables

- Sex (male/ female).
- Age at index date namely:
    - 12-17 years
    - 18-30 years
    - 31-40 years
    - 41-50 years
    - 51-60 years
    - 61-70 years
    - 71-80 years
    - ≥ 81 years
- The pre-specified mental health disorders of interest included:
    - Depression
    - Anxiety
    - Bipolar disorder
    - Post-traumatic stress disorder (PTSD)
    - Eating disorders
    - Psychotic disorders

List of codes for identifying the mental health disorders are described in **Appendix I. Table S 1**.

The operational definition of the covariates is described in the **Table 8.**

Table 8. Operational definitions of covariates.

Characteristic	Details	Type of variable	Assessment window	Care Settings[1]	Code Type	Diagnosis Position	Applied to study populations	Measurement characteristics/ validation	Source for algorithm
Demographics	Age at index date and sex	Binary, numeric continuous	All history	OP	n/a	n/a	All cohorts	n/a	n/a
Mental health disorders of interest	Diagnosis record	Binary	All history	OP	SNOMED	n/a	All cohorts	n/a	n/a

[1] OP = outpatient, n/a = not applicable

9.7 Study size

No sample size was calculated as this is a descriptive disease epidemiology study where we were interested in the incidence rates of suicidality in patient with chronic skin conditions, using already collected available data.

9.8 Data transformation

Analyses were conducted separately for each database. Before study initiation, test runs of the analytics were performed on a subset of the data sources and quality control checks were performed. Once all the tests passed (see section 11 Quality Control), the final package was released in the version-controlled Study Repository for execution against all the participating data sources.

The data partners locally executed the analytics against the OMOP-CDM in R Studio and reviewed and approved the - by default - aggregated results.

The study results of all data sources were checked after which they were made available to the team and the Dissemination Phase started. All results were locked and timestamped for reproducibility and transparency.

9.9 Statistical methods

9.9.1 Patient privacy protection

Cell suppression was applied as required by databases to protect individual's privacy. Cell counts <5 was masked.

9.9.2 Main summary measures

Results were presented by counts, proportions, mean, median, range, and incidence rates. Incidence rates of suicidality-related outcomes (with 95% confidence intervals) were estimated.

9.9.3 Main statistical methods

We performed a population level disease epidemiology study classified as "*off-the-shelf*" and as described in the DARWIN EU® Complete Catalogue of Standard Data Analyses (**Table 9**). The incidence rates of suicidality-related events in patients with acne and in patients with psoriasis were described and compared to the general population, overall and stratified by sex, age categories, calendar year, and with/without mental health disorders at the start of follow-up.

Table 9. Description of study type and type of analysis

STUDY TYPE	STUDY CLASSIFICATION	TYPE OF ANALYSIS
Population-level descriptive epidemiology	Off-the-shelf (C1)	Incidence rates of the condition of interest

R-packages

The incidence rates were calculated based on OMOP-CDM mapped data using the "*IncidencePrevalence*" R package, developed by DARWIN EU®.(39)

Incidence rates of the outcomes of interest were calculated as the number of newly diagnosed individuals with the outcome of interest divided by the person-years as contributed by the population at risk of the outcome during the period for each calendar year. Follow-up was censored upon the end of the observation period, the outcome of interest or upon death whichever came first. Incidence rates were given together with 95% Poisson confidence intervals. **Figure 2** represents an example of incidence rate estimation.

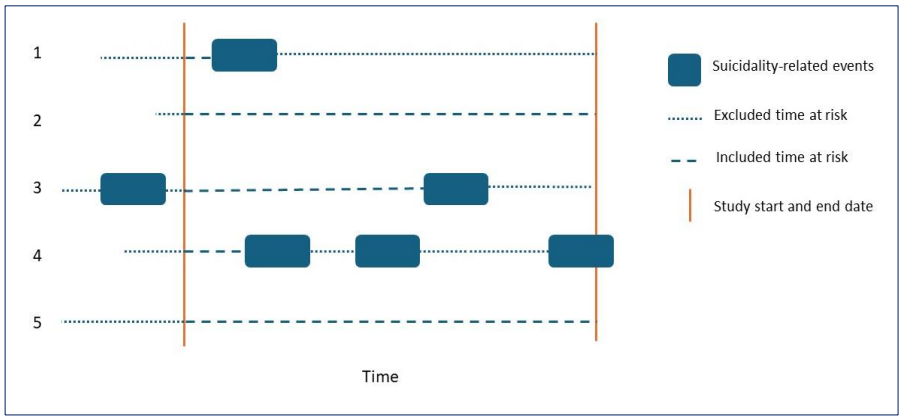


Figure 2. Example of incidence rate estimation.

Patient IDs 1, 3, and 4 contribute time at risk between the study start until they have an incident outcome of interest. Patient IDs 2 and 5 contribute time at risk between the study start and end date as no outcome of interest is observed between this period nor before the study start date. Infinite wash out was applied because only the first outcome after follow-up was included, however individuals with the history of outcomes (i.e. suicide attempt, suicide ideation, intentional self-harm) before the index date were allowed to be included in the study.

Incidence rates were further stratified by:

- Sex
- Age groups (12-<18, 18-30, 31-40, 41-50 etc, ≥81).
- Calendar Year
- Presence/absence of medical history of any mental health disorders (i.e. depression, anxiety, post-traumatic stress disorder, eating disorder, and psychotic disorders) at index date

9.9.4 Missing values

For the disease epidemiology studies we assume that the absence of a diagnosis record means that the person did not receive the diagnosis.

9.9.5 Sensitivity analysis

There were no sensitivity analyses in this study.

9.10 Evidence synthesis

Results from analyses described in section '9.9 Data analysis' were presented separately for each database and no meta-analysis of results was conducted.

10. DATA MANAGEMENT

10.1 Data management

All databases have previously mapped their data to the OMOP common data model. This enables the use of standardised analytics and using DARWIN EU® tools across the network since the structure of the data and the terminology system is harmonised. The OMOP CDM was developed and maintained by the Observational Health Data Sciences and Informatics (OHDSI) initiative and is described in detail on the wiki page of the CDM: https://ohdsi.github.io/CommonDataModel and in The Book of OHDSI: http://book.ohdsi.org

The analytic code for this study was written in R and used standardized analytics wherever possible. Each data partner executed the study code against their database containing patient-level data, and then returned the results (csv files) which only contained aggregated data. The results from each of the contributing data sites were then combined in tables and figures for the study report.

10.2 Data storage and protection

For this study, personal data from individuals in various EU member states were processed, using information collected from national/regional electronic health record databases. Due to the sensitive nature of this personal medical data, it is important to be fully aware of ethical and regulatory aspects and to strive to take all reasonable measures to ensure compliance with ethical and regulatory issues on privacy.

All databases used in this study were already used for pharmaco-epidemiological research and have a well-developed mechanism to ensure that European and local regulations dealing with ethical use of the data and adequate privacy control are adhered to. In agreement with these regulations, rather than combining person level data and performing only a central analysis, local analyses were run, which generate non-identifiable aggregate summary results.

11. QUALITY CONTROL

General database quality control

A number of open-source quality control mechanisms for the OMOP CDM have been developed (see Chapter 15 of The Book of OHDSI http://book.ohdsi.org/DataQuality.html). In particular, all data partners ran the OHDSI Data Quality Dashboard tool (https://github.com/OHDSI/DataQualityDashboard). This tool provides numerous checks relating to the conformance, completeness and plausibility of the mapped data. Conformance focuses on checks that describe the compliance of the representation of data against internal or external formatting, relational, or computational definitions. Completeness in the sense of data quality is solely focused on quantifying missingness, or the absence of data, while plausibility seeks to determine the believability or truthfulness of data values. Each of these categories has one or more subcategories and are evaluated in two contexts: validation and verification. Validation relates to how well data align with external benchmarks with expectations derived from known true standards, while verification relates to how well data conform to local knowledge, metadata descriptions, and system assumptions.

Study specific quality control

The SNOMED codes of the conditions and outcomes of interest were derived from ATLAS. The codes were then reviewed by two clinical epidemiologists to consider their relevance and accuracy. In addition, the "*CohortDiagnostics*" R package (https://github.com/OHDSI/CohortDiagnostics) was run to assess the use of

different codes across the databases contributing to the study and identify any codes potentially omitted in error. This allowed for a consideration of the validity of the study cohort of patients with the selected conditions and outcomes in each of the databases and informed decisions around whether multiple definitions were required.

12. RESULTS

The full set of results for this study is available through an interactive web-application ("shiny app") at https://data-dev.darwin-eu.org/p3-c1-010-results-app/.

12.1 Participants

The largest number of individuals with acne was observed in CPRD Gold (304,241 person counts), followed by NAJS (201,209), SIDIAP (192,367), VID (62,296), and IPCI (61,938), see

Table 10. Individuals with acne were young (median age ranged between 17-20 years across databases) and predominantly female (62.9-65.3%). As VID only contains females aged between 12-59 years, differences by sex could not be described. The highest number of individuals with psoriasis was found in CPRD Gold (145,793 person counts), followed by SIDIAP (124,296), NAJS (96,529), IPCI (33,188), and then VID (20,778). The psoriasis population across data sources included a broader age range, with median ages between 43 and 55 years across databases (

Table 10). Sex distribution was relatively balanced, with slightly higher proportion of females in CPRD Gold (53%).

Table 11 Table 11. Number of individuals and demographic distribution of outcomes of interest during the study period.describes the demographics of individuals with suicide-related events across databases. Completed suicide was only reported for IPCI and CPRD COLD, with 142 and 797 cases, respectively. Suicide attempts were most prevalent, with CPRD recording 31,868 cases, followed by SIDIAP (17,952), NAJS (12,664), IPCI (5,728), and VID (4,401). Suicidal ideation was notably high in CPRD (54,302 cases) but less common in other databases. Intentional self-harm was also most frequently recorded in CPRD (47,957 cases). The proportion of females ranged widely, from 28.5% for completed suicide (CPRD Gold) to 64.5% for suicide attempts (SIDIAP). Median ages varied between data sources and outcomes spanning late 20s to mid-40s. In comparison to individuals with suicide attempt, suicidal ideation, and intentional self-harm, individuals who completed suicide were more often male (56.3-71.5%) and median age (40-47 years) was higher compared to individuals with other outcomes (29-43 years).

Table 10. Number of individuals and demographic distribution of skin conditions of interest during the study period.

Cohort			CPRD Gold (UK)	IPCI (NL)	NAJS (Croatia)	SIDIAP (Spain)	VID (Spain)
Acne		Overall	304,241	61,938	201,209	192,367	62,296
	Sex	Female (%)	192,566 (63.7)	39,414 (65.3)	122,400 (62.9)	110,120 (57.24)	59,494 (100.0)
	Age	Median [Q25 - Q75]	19 [16 - 27]	20 [16 - 27]	19 [15 - 27]	17 [14 - 25]	20 [15 - 27]
		Mean (SD)	23.02 (10.75)	23.43 (11.33)	23.20 (11.92)	21.06 (10.19)	22.39 (9.40)
		Range	12 to 113	12 to 96	12 to 98	12 to 100	12 to 59
Psoriasis			145,793	33,188	96,520	124,296	20,778
	Sex	Female (%)	76,661 (53.0)	15,975 (49.0)	46,247 (48.9)	57,207 (46.02)	20,617 (100.0)
	Age	Median [Q25 - Q75]	47 [33 - 61]	54 [39 - 67]	55 [41 - 66]	51 [37 - 64]	43 [33 - 51]
		Mean (SD)	47.32 (18.35)	52.71 (18.50)	52.94 (17.47)	50.58 (17.98)	41.17 (11.79)
		Range	12 to 113	12 to 101	12 to 100	12 to 103	12 to 59

NC: No person counts

Table 11. Number of individuals and demographic distribution of outcomes of interest during the study period.

Cohort			CPRD Gold (UK)	IPCI (NL)	NAJS (Croatia)	SIDIAP (Spain)	VID (Spain)
Completed suicide			142	797	NC	NC	NC
	Sex	Female (%)	41 (28.5)	348 (43.7)	NC	NC	NC
	Age	Median [Q25 - Q75]	40 [27 - 56]	47 [30 - 60]	NC	NC	NC
		Mean (SD)	42.33 (19.25)	45.75 (19.07)	NC	NC	NC
		Range	13 to 86	9 to 89	NC	NC	NC
Suicide attempt			31,868	5,728	12,664	17,952	4,401
	Sex	Female (%)	19,007 (58.1)	3,322 (58.0)	7,116 (56.2)	11,574 (64.47)	4,401 (100.0)
	Age	Median [Q25 - Q75]	30 [20 - 44]	43 [25 - 56]	43 [24 - 59]	42 [26 - 54]	35 [19 - 47]
		Mean (SD)	33.43 (16.26)	42.41 (19.29)	43.25 (21.56)	41.71 (18.88)	33.56 (14.59)

Cohort			CPRD Gold (UK)	IPCI (NL)	NAJS (Croatia)	SIDIAP (Spain)	VID (Spain)
		Range	1 to 115	2 to 98	1 to 102	2 to 102	9 to 59
Suicidal ideation			54,302	NC	NC	9,459	3,100
	Sex	Female (%)	27,841 (49.4)	NC	NC	5,458 (57.70)	3,100 (100.0)
	Age	Median [Q25 - Q75]	34 [22 - 48]	NC	NC	41 [22 - 54]	37 [21 - 47]
		Mean (SD)	36.41 (16.56)	NC	NC	40.48 (19.84)	34.93 (14.14)
		Range	1 to 110	NC	NC	5 to 100	10 to 59
Intentional self-harm			47,957	NC	8,916	8,085	2,882
	Sex	Female (%)	29,160 (59.3)	NC	5,672 (63.6)	4,911 (60.74)	2,882 (100.0)
	Age	Median [Q25 - Q75]	29 [19 - 44]	NC	43 [23 - 59]	42 [26 - 55]	33 [17 - 46]
		Mean (SD)	32.78 (17.23)	NC	42.68 (20.91)	42.68 (20.18)	32.26 (14.87)
		Range	1 to 111	NC	1 to 100	1 to 98	9 to 59
Composite suicide			96,845	6,395	13,462	29,565	7,047
	Sex	Female (%)	53,072 (53.2)	3,606 (56.4)	7,708 (57.3)	18,075 (61.14)	7,047 (100.0)
	Age	Median [Q25 - Q75]	32 [20 - 47]	43 [25 - 56]	42 [22 - 59]	42 [26 - 54]	35 [19 - 47]
		Mean (SD)	34.70 (17.20)	42.75 (19.27)	42.32 (21.86)	41.98 (19.30)	33.47 (14.62)
		Range	1 to 115	2 to 98	1 to 102	1 to 102	9 to 59
Suicide-related events			79,600	6,395	12,664	25,554	6,623
	Sex	Female (%)	43,035 (52.4)	3,606 (56.4)	7,116 (56.2)	15,793 (61.80)	6,623 (100.0)
	Age	Median [Q25 - Q75]	33 [21 - 47]	43 [25 - 56]	43 [24 - 59]	42 [25 - 54]	36 [20 - 47]
		Mean (SD)	35.43 (16.64)	42.75 (19.27)	43.25 (21.56)	41.51 (19.13)	34.21 (14.45)
		Range	1 to 115	2 to 98	1 to 102	2 to 102	9 to 59

12.2 Incidence rate of suicidality related events

12.2.1 Incidence rates stratified by calendar year

The incidence rates of suicidality related events were calculated in the acne, psoriasis, and general population stratified by calendar years. **Appendix II. Tables S1-S18** describe the counts of outcome events, total time at risk, and incidence rates with 95% CI in each data source during the study period and results are displayed in **Figures 3-8**.

Completed suicide

The counts were very low and only available in CPRD and IPCI. A decline in incidence rate in the general population could be observed for CPRD Gold from 0.6/100,000 PY in 2010 to 0.2 by 2020. From 2021 on, incidence rates were no longer provided due to low counts. In contrast, in IPCI, the results showed an increase in incidence rates per 100,000 PYs over years, starting from 3.1 in 2010 to 9.5 by 2022. The counts in the acne and psoriasis populations were very low or missing in all other databases (**Figure 3**).

Composite suicide outcome and suicide-related events

When comparing the incidence rate of composite suicide outcome in the three cohorts of interest, the acne population consistently exhibited higher rates than in the psoriasis and general population. The incidence rates in psoriasis population were also higher than the general population.

The incidence rates of composite suicide outcome in the acne population ranged widely in all databases and across all calendar years between 258.9-363.6/100,000 PY (CPRD Gold), 56.0-126.5 (IPCI), 34.0-77.1 (NAJS), 32.1-161.9 (SIDIAP), and 143.5-337.7 (VID). In the psoriasis population the incidence rates were slightly lower and ranged between 166.7-264.8/100,000 PY (CPRD Gold), 30.9-104.3 (IPCI), 33.9-70.1 (NAJS), 40.7-111.5 (SIDIAP), 129.4-299.5 (VID). The incidence rates per 100,000 PYs in the general population were the lowest from all cohorts and ranged between 146.7-212.6 (CPRD Gold), 49.9-63.8 (IPCI), 26.9-49.3 (NAJS), 15.2-95.0 (SIDIAP), and 130.8-209.3 (VID) (

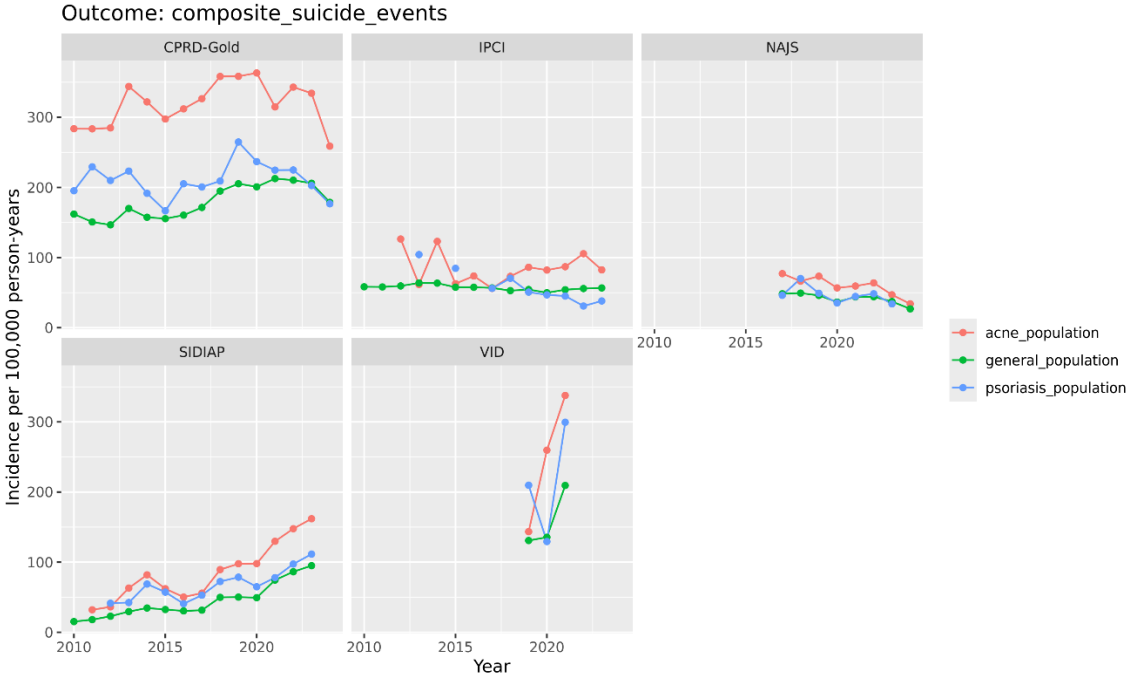


Figure 4). A similar pattern was observed for suicide-related events outcome, with the acne population consistently showing higher incidence rates than the psoriasis and general populations, and the psoriasis population exhibiting higher rates than the general population (

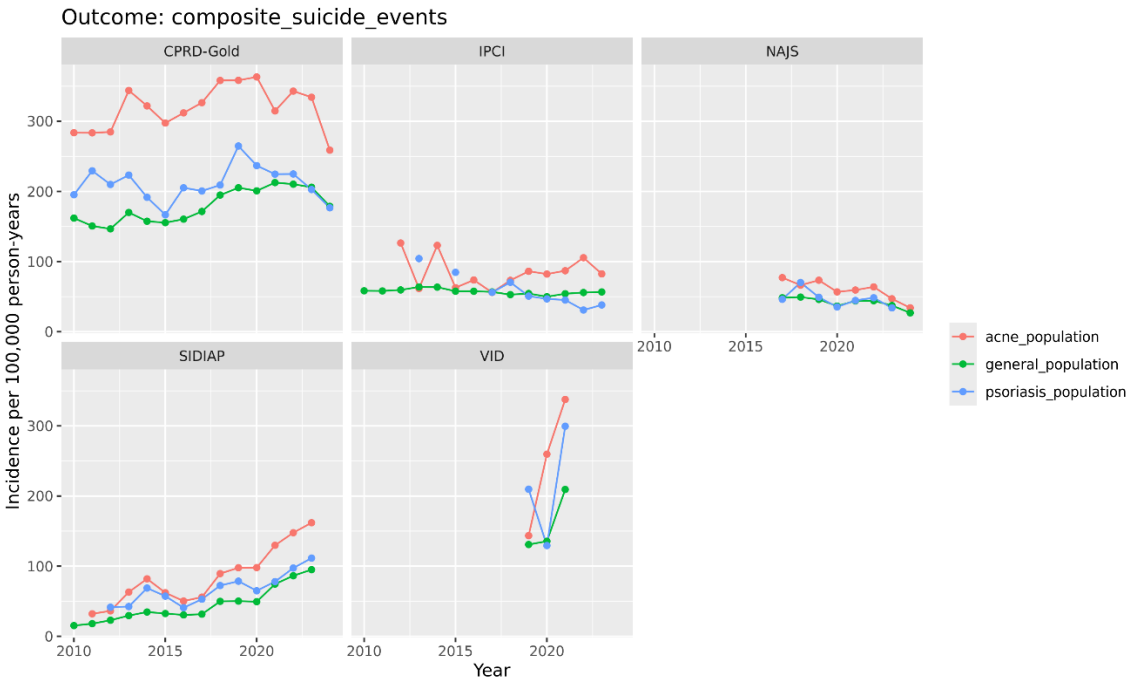


Figure 45).

Suicide attempt, suicidal ideation, and intentional self-harm outcomes

The incidence rates of the individual outcomes of suicide attempt, suicidal ideation (no counts for IPCI and NAJS), and intentional-self harm (no counts for IPCI) were very much in line with the incidence rates of the composite suicide outcome (**Figures 6-8**) with highest rates in the acne population. Incidence rates of suicide attempt in the acne population were generally higher with rates that remained stable or decreased over time in CPRD Gold (from 109.0/100,000 PYs in 2010 to 54.1 in 2024), IPCI (from 126.5 in 2012 to 82.4 in 2023), and NAJS (from 70.8 in 2017 to 26.7 in 2024), but increased over time in SIDIAP (from 16.5 in 2012 to 100.4 in 2024) and VID (from 75.1 in 2019 to 243.2 in 2021). In the psoriasis population, rates were more moderate and remained stable or declined in CPRD Gold (from 48.8/100,000 PYs in 2010 to 36.5 in 2024), IPCI (from 104.3 in 2010 to 31.8 in 2023), and NAJS (from 43.8 in 2017 to 31.4 in 2023), but increased over time in SIDIAP (from 24.2 in 2013 to 64.4 in 2023) and VID (from 121.6 in 2020 to 197.4 in 2021). The general population had the lowest rates overall (

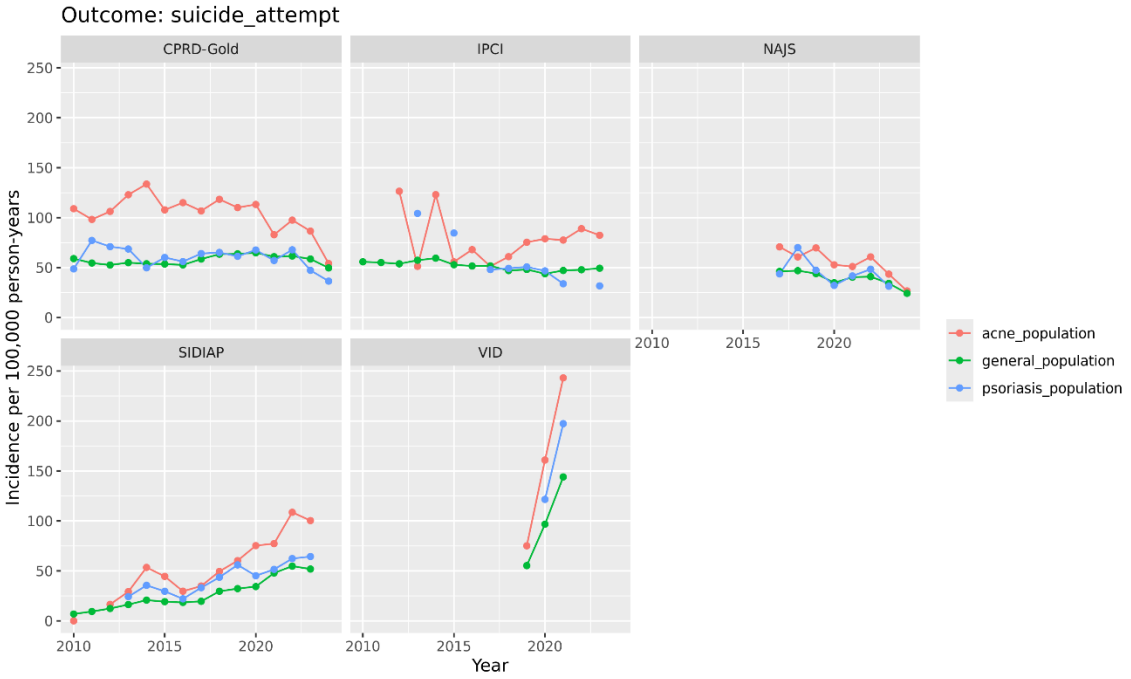
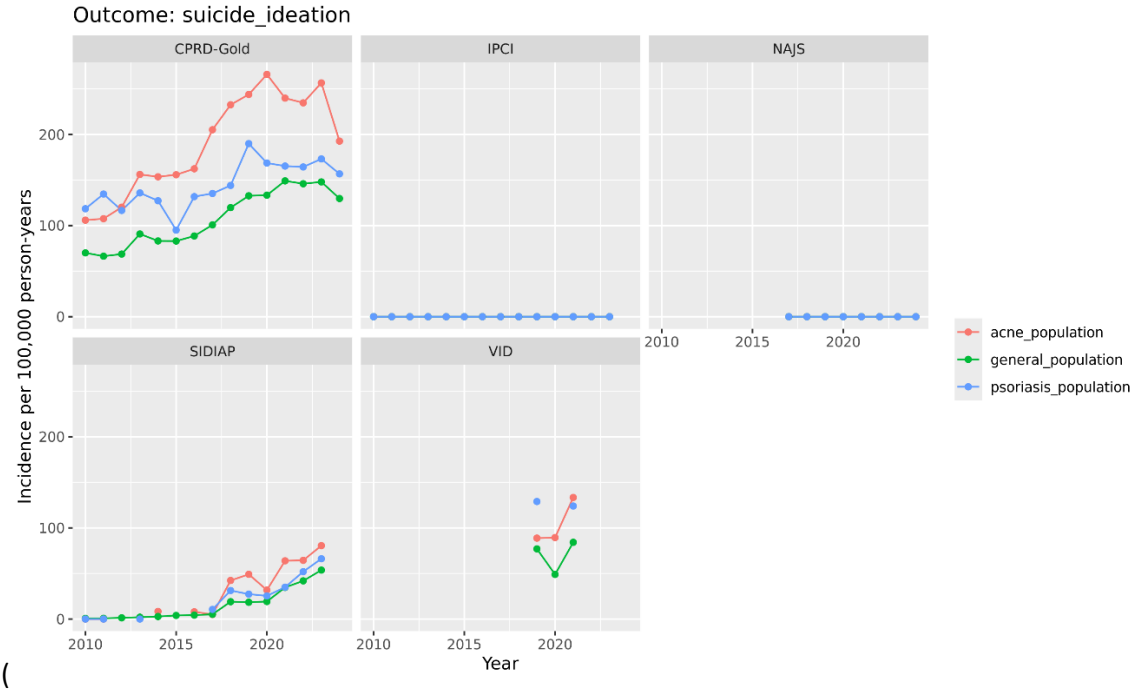


Figure 6).

Incidence rates of suicidal ideation in individuals with acne were higher than psoriasis and general population and increased over the years, particularly in CPRD Gold (from 105.9/100,000 PYs in 2010 to 192.6 in 2024) and SIDIAP (from 8.3 in 2014 to 80.6 in 2023). For individuals with psoriasis, the incidence rate of suicidal ideation rose over the years in CPRD Gold (from 118.5 in 2010 to 156.7 in 2024) and SIDIAP (from 10.5 in 2017 to 66.2 in 2023) and were higher than in the general population



(

Figure 7).

In all databases, the incidence rate of intentional self-harm in individuals with acne and psoriasis decreased over time, except in VID, where rates increased from 75.1/100,000 PYs in 2020 to 147.4 in 2021 in the acne population, and from 76.0/100,000 PYs in 2020 to 101.4 in 2021 in the psoriasis population (

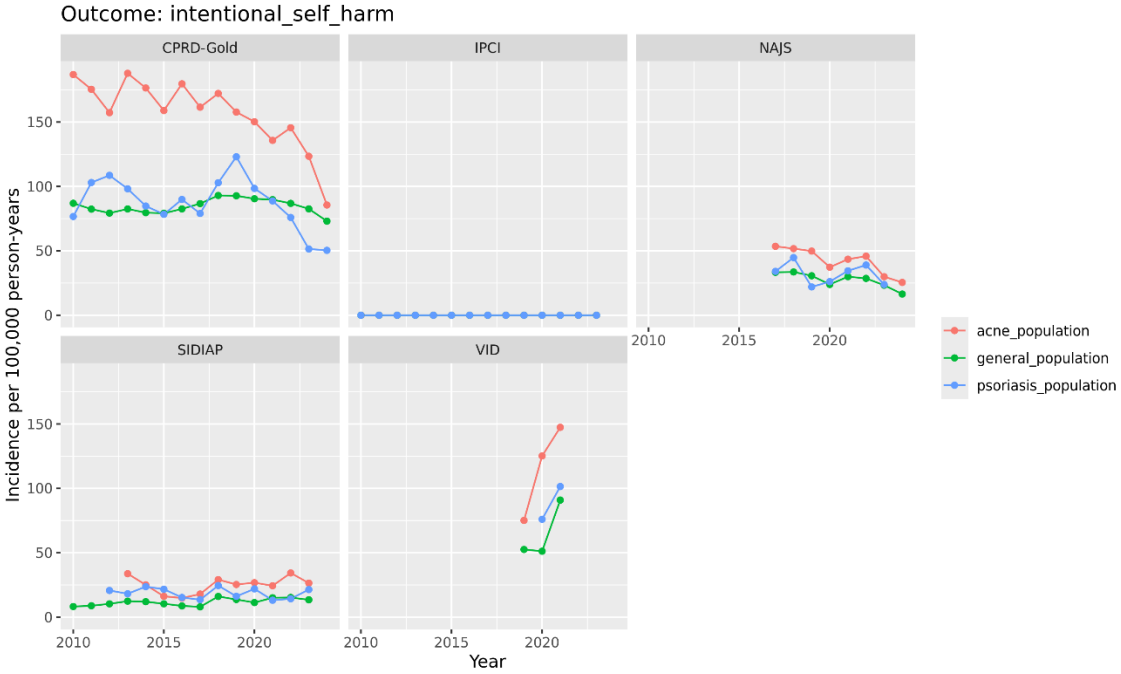


Figure 8).

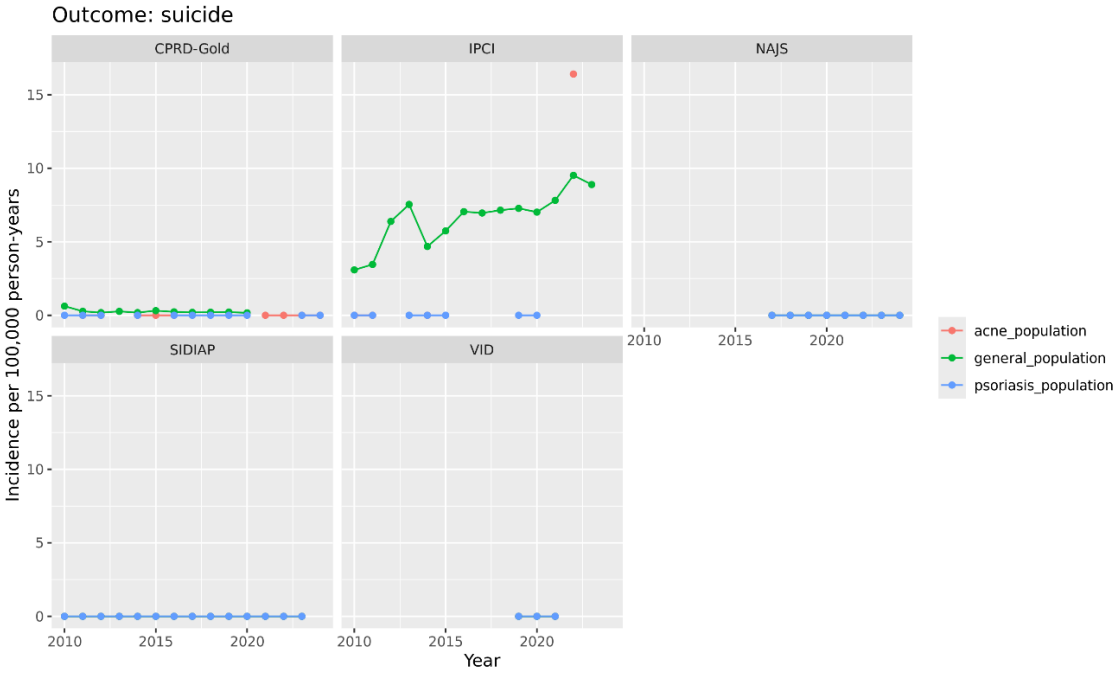


Figure 3. Incidence rates of completed suicide outcome over calendar years in the incident acne population, psoriasis population, and the general population in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

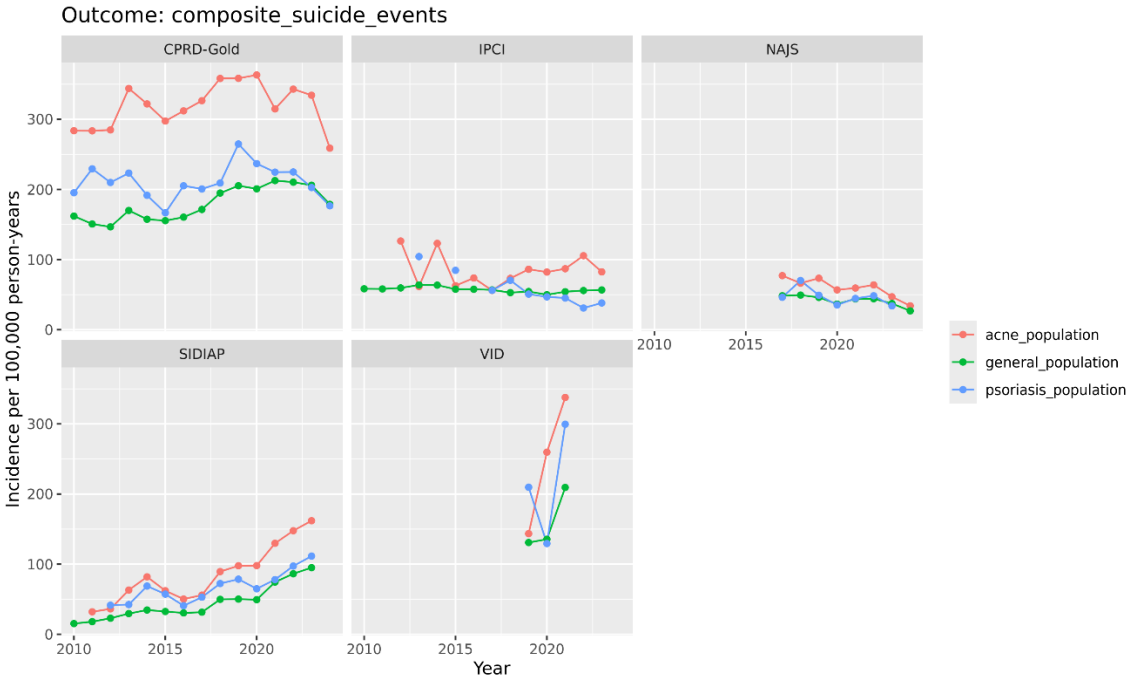


Figure 4. Incidence rates of composite suicide outcome over calendar years in the incident acne population, psoriasis population, and the general population in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

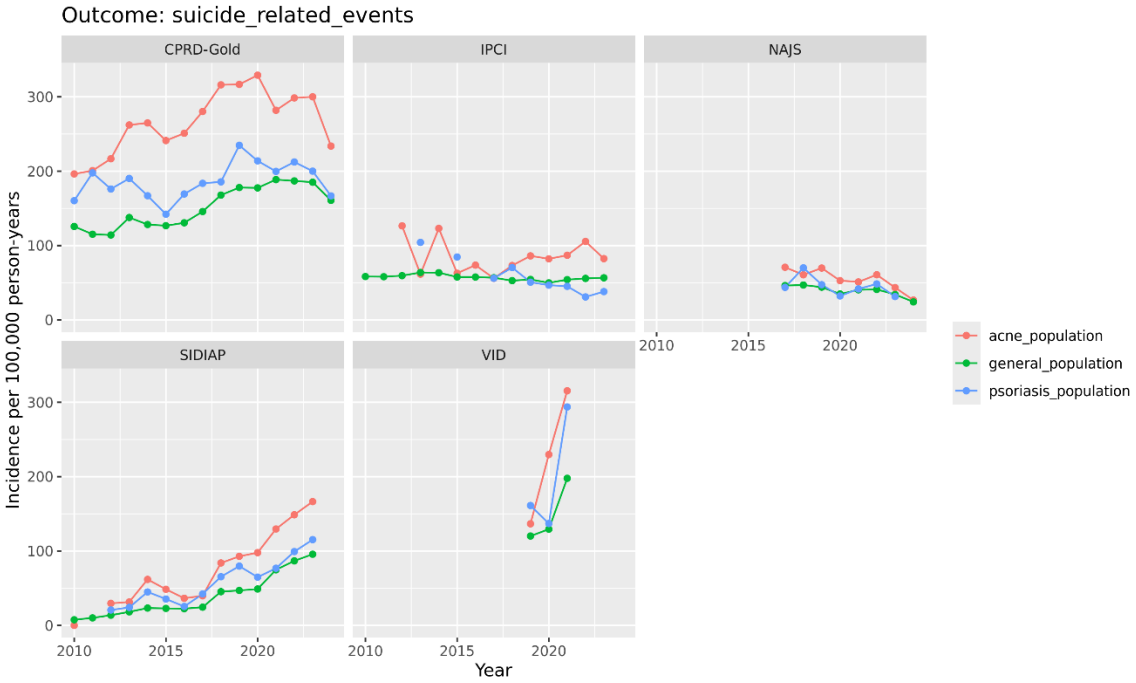


Figure 5. Incidence rates of suicide-related events outcome over calendar years in the incident acne population, psoriasis population, and the general population in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

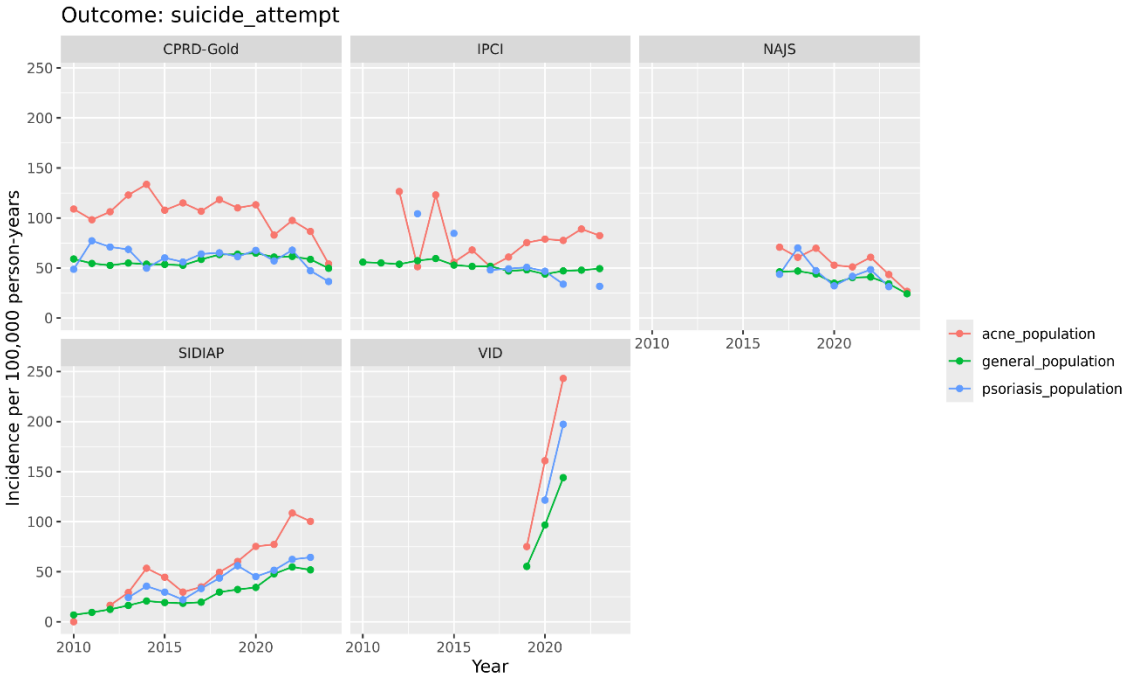


Figure 6. Incidence rates of suicide attempt outcome over calendar years in the incident acne population, psoriasis population, and the general population in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

Figure 7. Incidence rates of suicidal ideation outcome over calendar years in the incident acne population, psoriasis population, and the general population in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

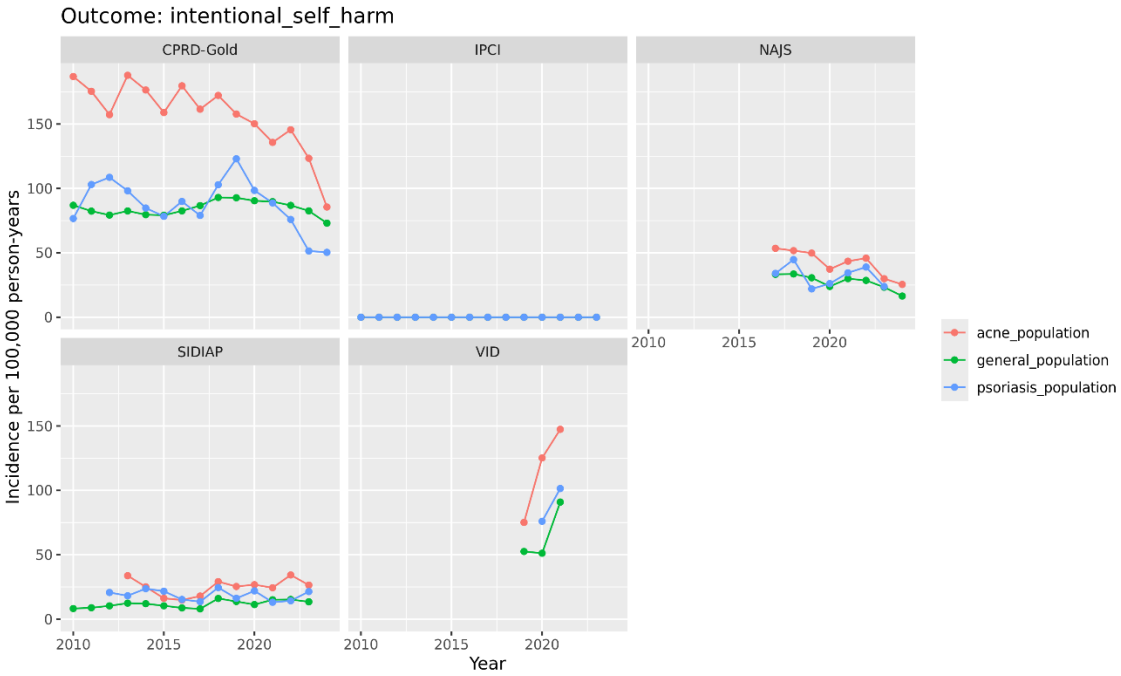


Figure 8. Incidence rates of intentional self-harm outcome over calendar years in the incident acne population, psoriasis population, and the general population in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

12.2.2 Incidence rates stratified by age categories and sex

The results showed that younger age groups, particularly in the acne and psoriasis populations, exhibit higher incidence rates of suicidality related outcomes, especially among females and these rates declined with age, see **Figures 9-14**.

The incidence rates for completed suicide events across all data sources were nearly zero or no counts, with the highest observable rate in IPCI among the general population, peaking in the 51-60 age group (10.98/100,000 PYs for male and 8.47 for female) (

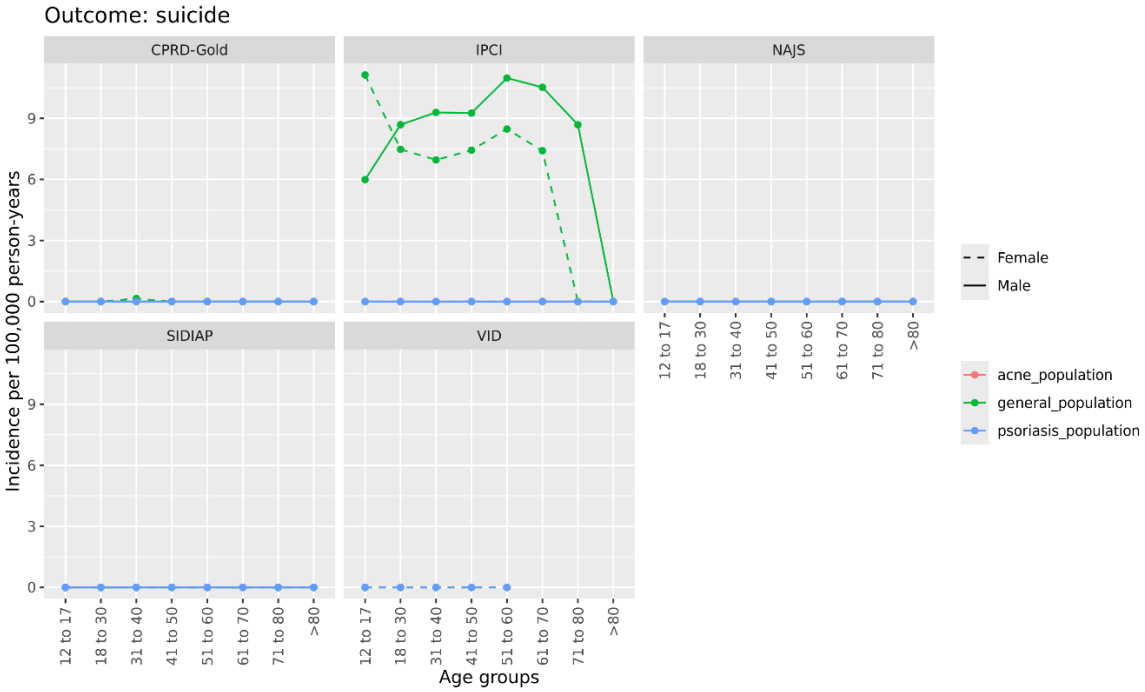


Figure 9).

When focusing on the incidence rates of composite suicide outcome, the highest rates were observed in the younger age groups (12-17 years and 18-30) across all three populations of most databases, with a notable decrease in rates with increasing age. This trend was particularly prominent in CPRD Gold and SIDIAP databases. The highest rates were recorded in the psoriasis population in CPRD Gold (910.8/100,000 PYs for ages 12–17 years and 387.7 for ages 18–30) and in SIDIAP (124.3/100,000 PYs for ages 18–30). In the acne population, the rates in CPRD Gold were 481.9/100,000 PYs for ages 12–17 years and 294.1 for ages 18–30, while in SIDIAP, the rates were 137.8/100,000 PYs for ages 12–17 years and 81.4 for ages 18–30. The lowest incidence rates in both age groups were observed in the general population across all databases (**Figure 10**).

The incidence rate of composite suicide outcomes was consistently higher among females compared to males across various populations and databases. For instance, in the acne population within the CPRD Gold database, the rates were 335.6/100,000 PYs for females and 306.8 for males. Similarly, in the psoriasis population, females had an incidence rate of 215.4/100,000 PYs compared to 208.5 for males, with a similar trend observed in the general population. This pattern was also evident in the SIDIAP database, where females in the acne population had a rate of 123.8/100,000 PYs, significantly higher than the 67.8 observed in males. In the psoriasis population, females showed a rate of 91.8/100,000 PYs compared to 54.2 for males, with females consistently showing higher rates in the

general population as well (

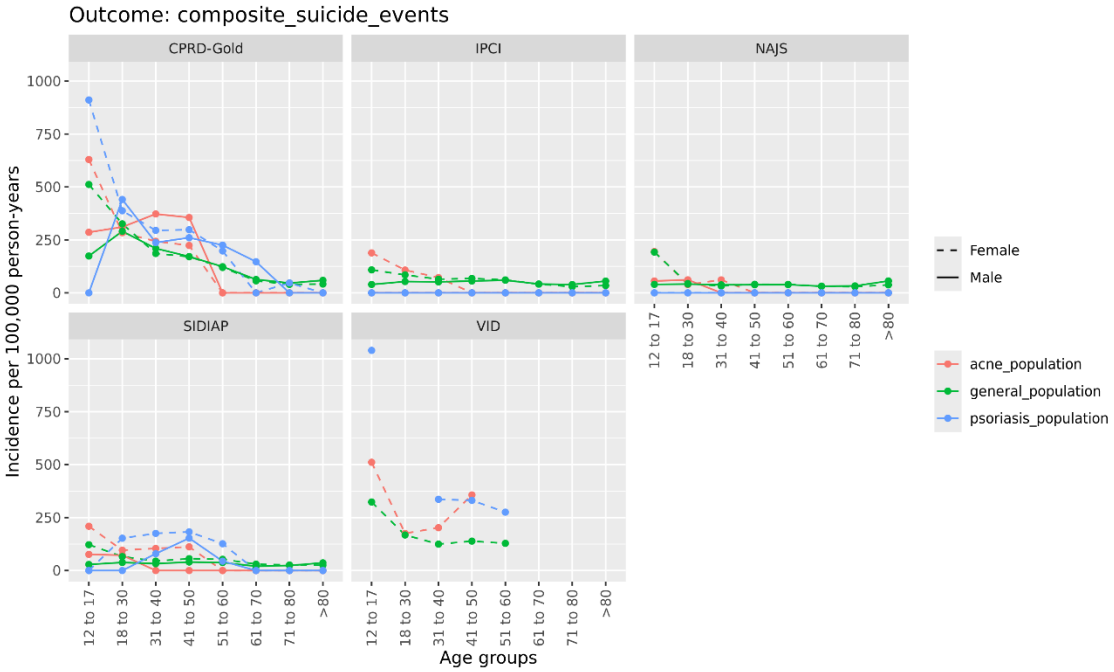


Figure 10. Incidence rates of composite suicide outcome stratified by age groups and sex in the incident acne population, psoriasis population, and the general population in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

). Similar trends were observed for other outcomes, including suicide-related events, suicide attempts, suicidal ideation, and intentional self-harm, influenced by age groups and sex differences (**Figures 11–14**).

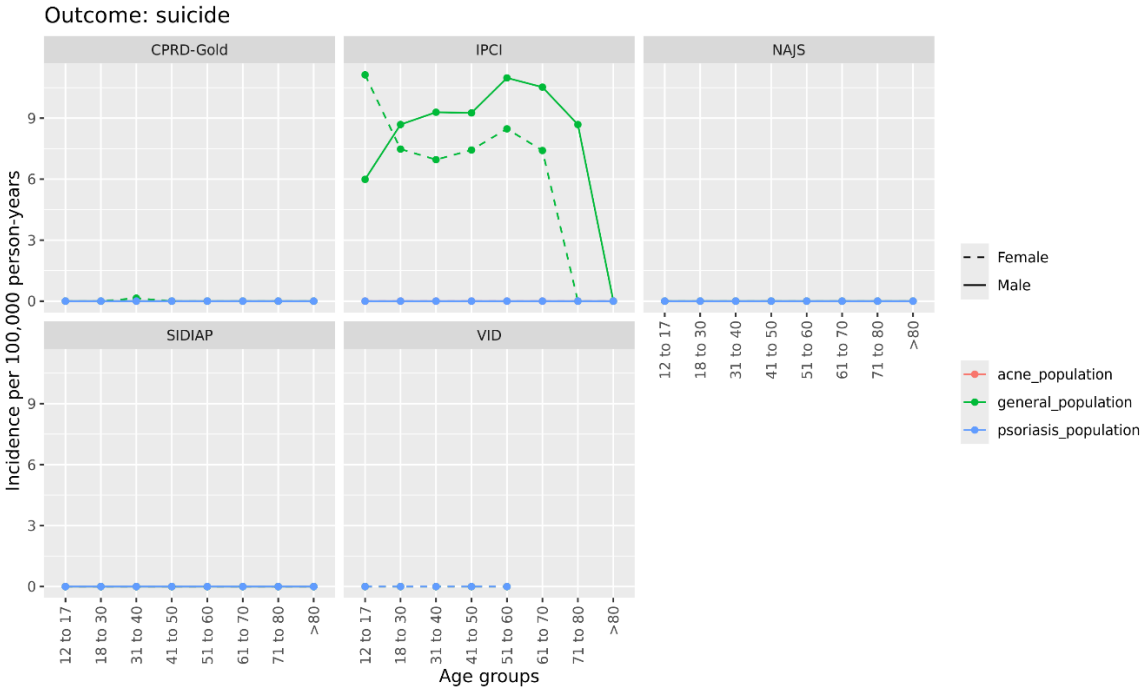


Figure 9. Incidence rates of completed suicide outcome stratified by age groups and sex in the incident acne population, psoriasis population, and the general population in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

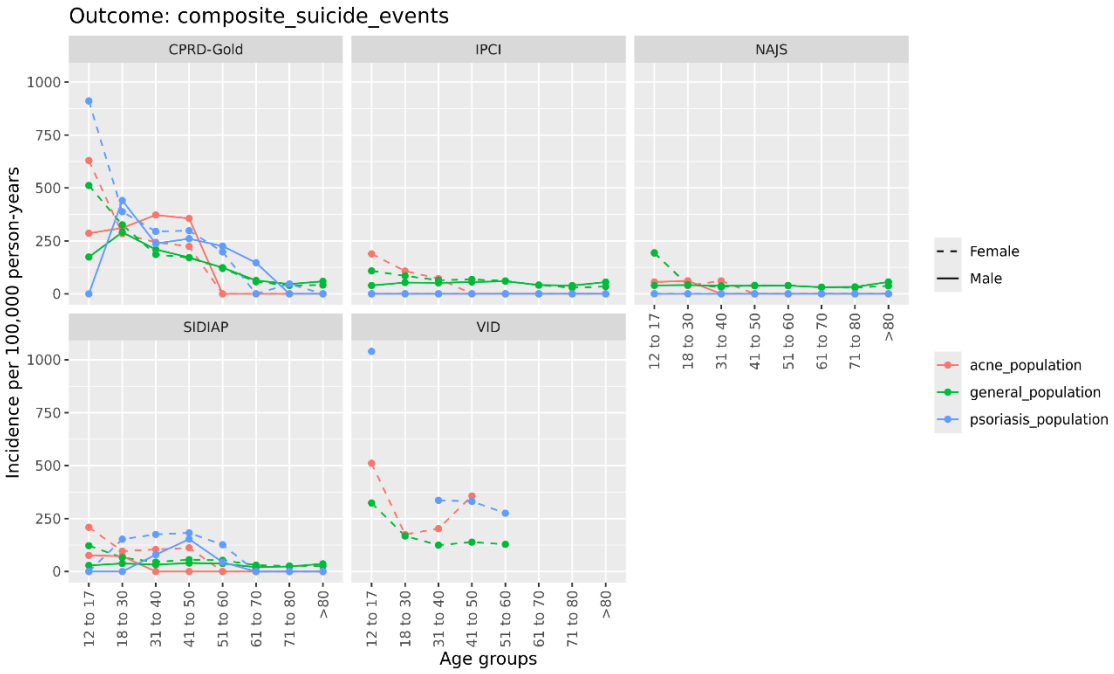


Figure 10. Incidence rates of composite suicide outcome stratified by age groups and sex in the incident acne population, psoriasis population, and the general population in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

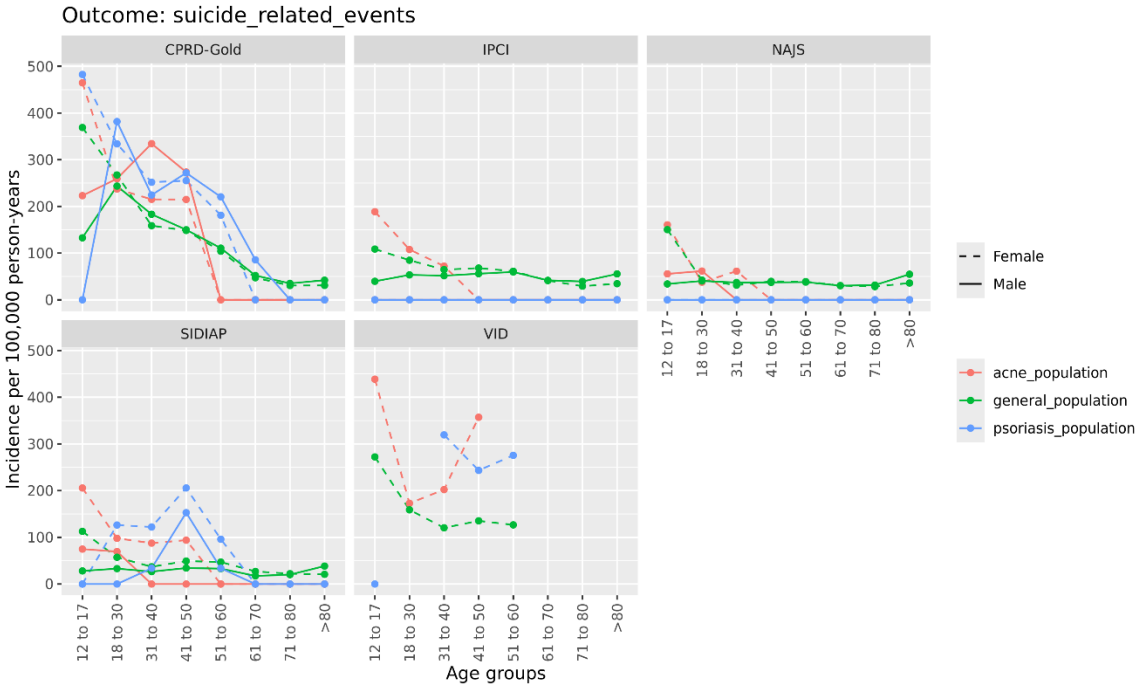


Figure 11. Incidence rates of suicide-related events outcome stratified by age groups and sex in the incident acne population, psoriasis population, and the general population in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

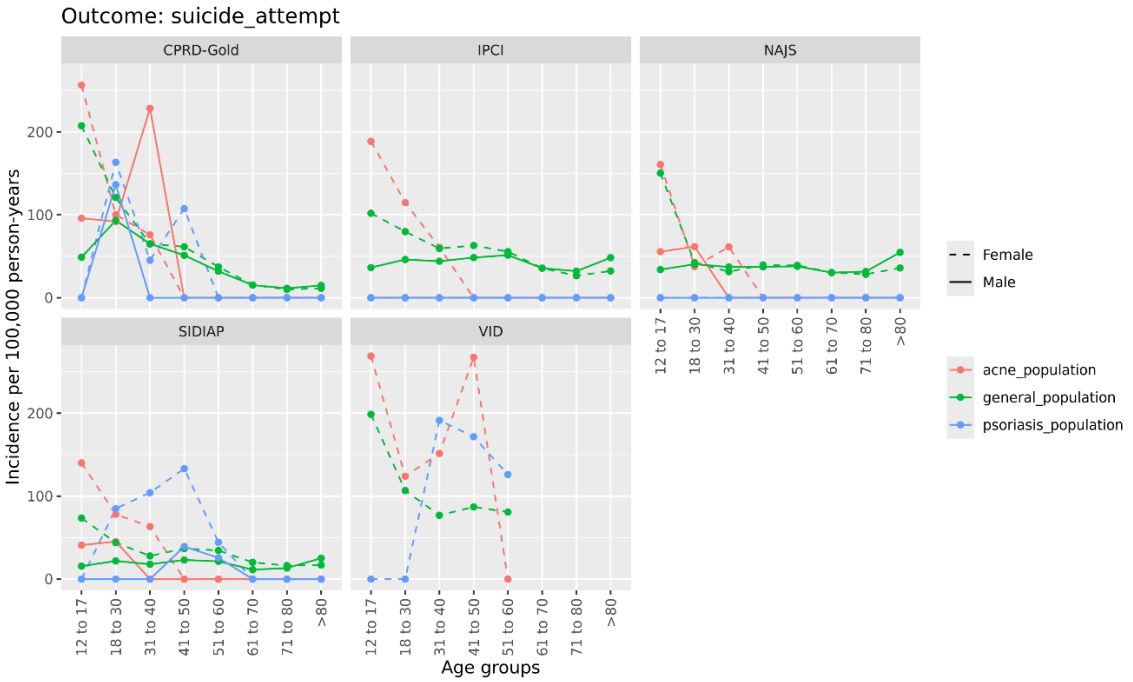


Figure 12. Incidence rates of suicide attempt outcome stratified by age groups and sex in the incident acne population, psoriasis population, and the general population in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

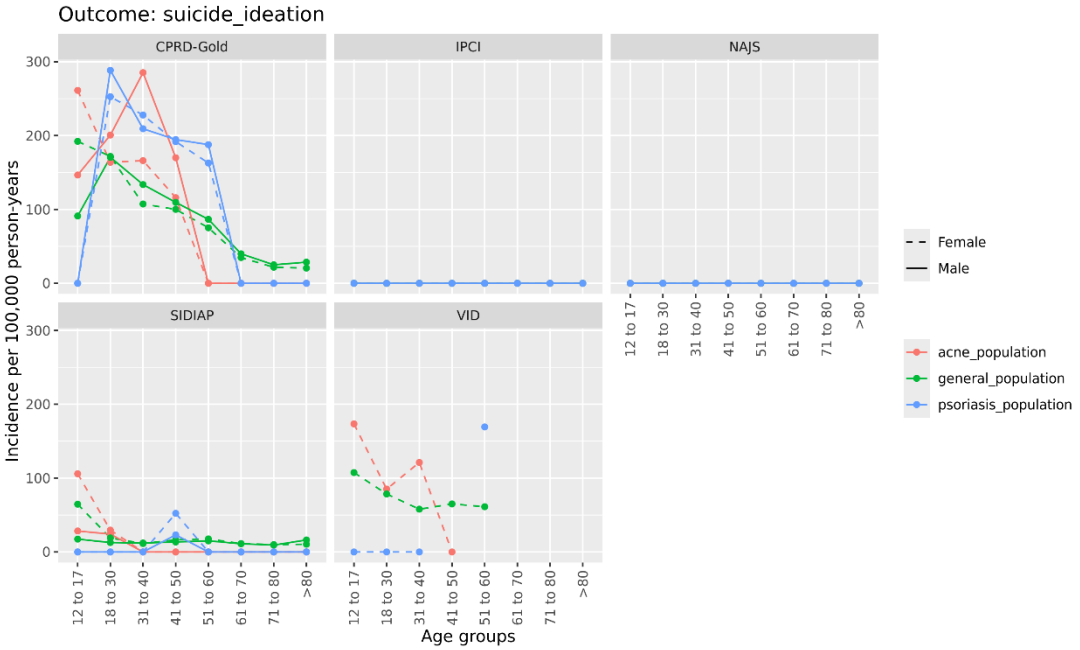


Figure 13. Incidence rates of suicidal ideation outcome stratified by age groups and sex in the incident acne population, psoriasis population, and the general population in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

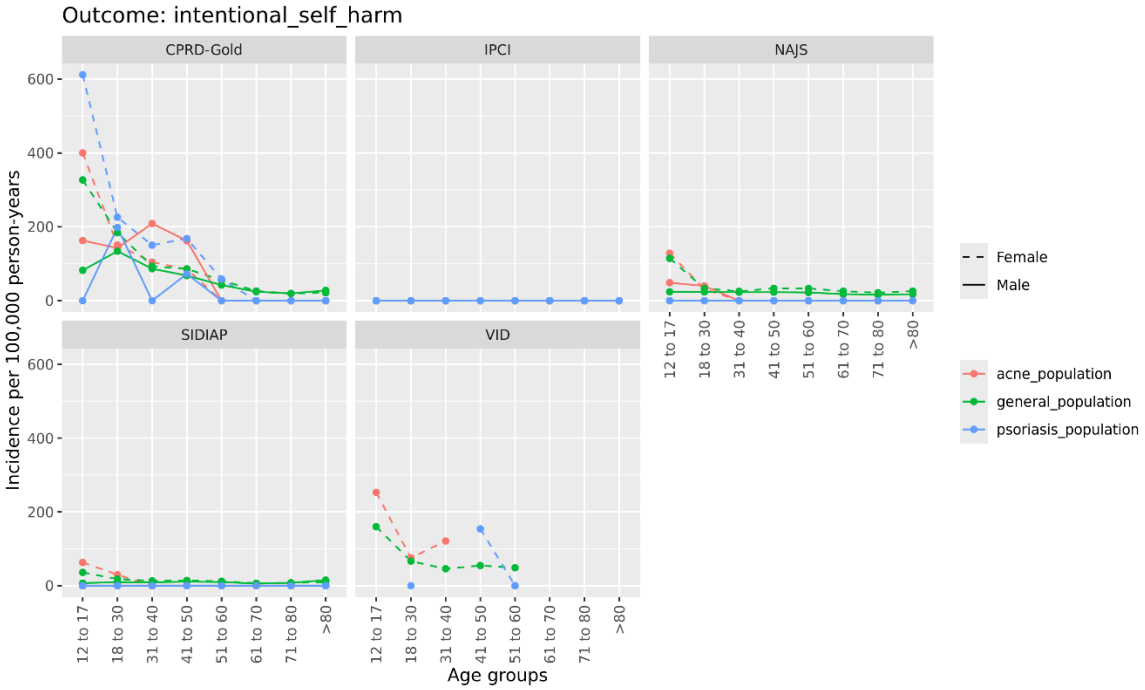


Figure 14. Incidence rates of intentional self-harm outcome stratified by age groups and sex in the incident acne population, psoriasis population, and the general population in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

12.2.2 Incidence rates stratified by history of mental health disorders

The incidence rates of suicidality-related events among individuals with prior mental health disorders, stratified by calendar year are displayed in **Figures 15-20**.

For most of the outcomes of interest, the incidence rates were higher in individuals with a history of mental health disorders and the incidence rate was the highest for individuals with acne, particularly in the CPRD Gold and SIDIAP databases. The incidence rates of composite suicide events among individuals with prior mental health disorders in the CPRD Gold database showed that individuals with acne had the highest rates, starting at 834.5 per 100,000 PYs in 2010 and generally remaining elevated throughout the years, fluctuating around 600-700 per 100,000 PYs. This is notably higher than in the general population with more stable rates range of 353-495 per 100,000 PYs and the psoriasis population with even lower rates of 335-558 per 100,000 PYs. In other databases the pattern was similar, though overall incidence rates were lower. In the SIDIAP database, for instance, the acne population's incidence rate for composite suicide events was 431.3 per 100,000 PYs in 2022, whereas the general population and the psoriasis population had a rate around 200 per 100,000 PYs during the same period (**Figure 16**). This trend for the highest incidence rate in individual with acne (and with a history of mental health disorders) remained similar across multiple outcomes of suicide-related events, suicide attempt, suicidal ideation, and intentional self-harm in all databases (**Figures 17-20)**.

The incidence rates of suicidality-related events in individuals without prior mental health disorders were much lower (**Figures 15-20)**. The acne population showed consistently higher rates than the general and psoriasis populations, with a more significant disparity in individuals with prior mental health disorders. In the population without prior mental health disorders, rates of composite suicide outcome in the acne population in CPRD Gold database were lower (below 200 per 100,000 PYs) and showed a gradual increase up to around 300 per 100,000 PYs. In SIDIAP database, a steady increase of incidence rates of composite suicide was observed for the acne population in both groups. However, the increase was sharper in individuals with prior mental health disorders, reaching around 400 per 100,000 PYs by the end of the period (**Figure 16)**. In other databases, data is sparse but generally incidence rates of composite suicide were lower in the population without prior mental health disorders. The trends were less consistent across these databases due to fewer data points (**Figure 16**). Comparable differences in patterns were observed across all other outcomes (suicide-related events, suicide attempt, suicidal ideation, and intentional self-harm) between the groups with and without mental health disorders, as shown in **Figures 17-20**.

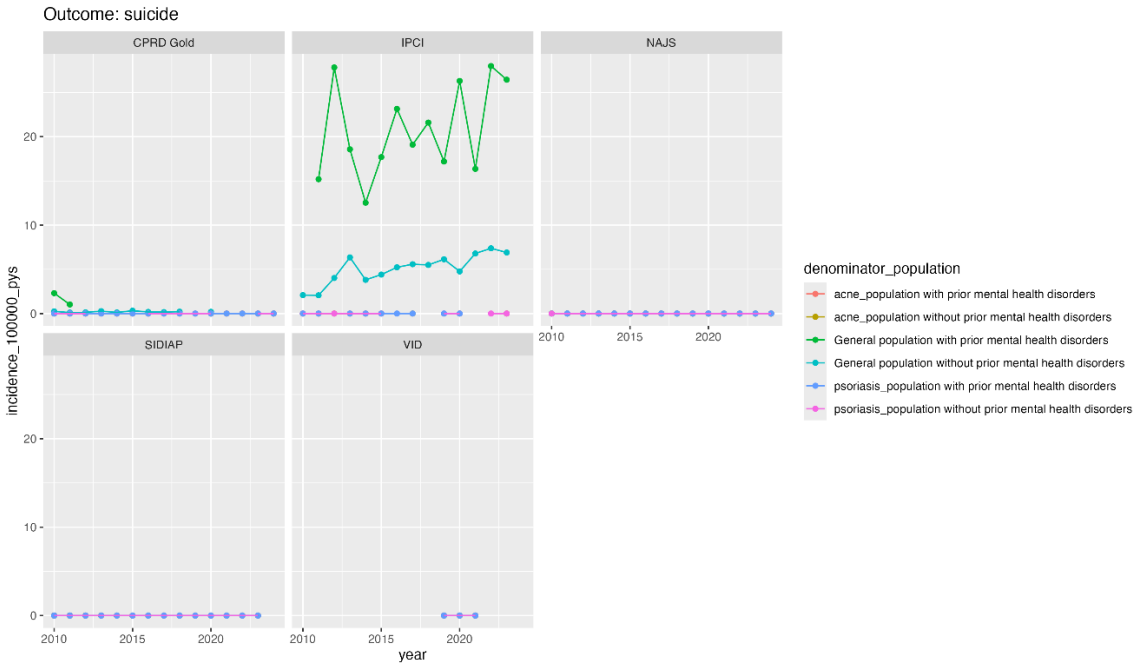


Figure 15. Incidence rates of completed suicide outcome over calendar years in the incident acne population, psoriasis population, and the general population with and without history of mental health disorders in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

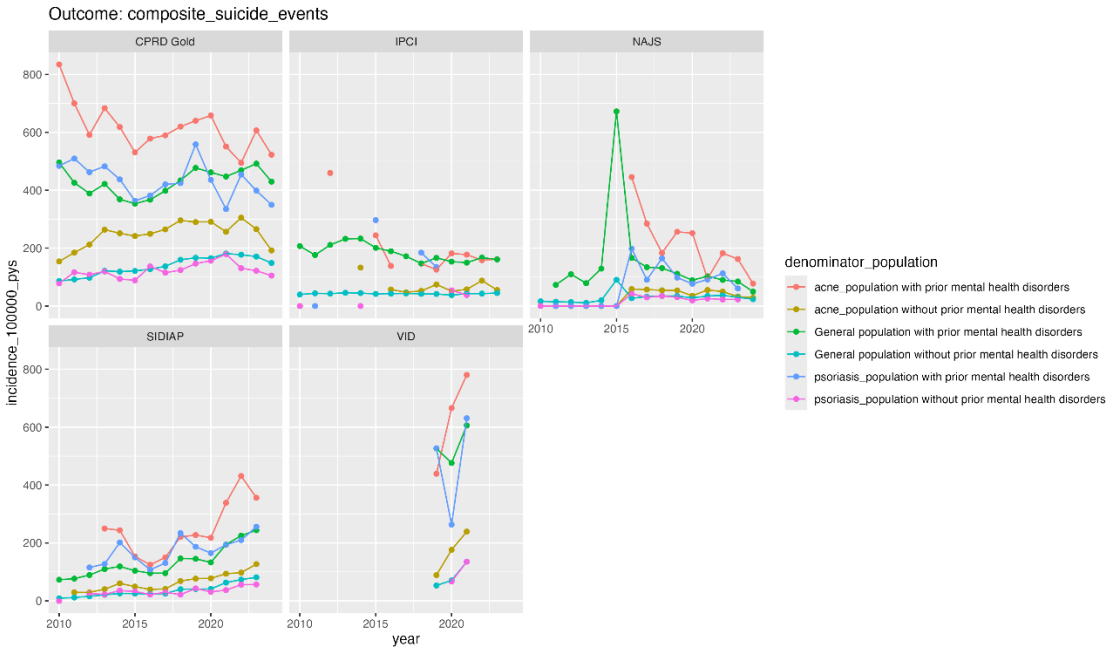


Figure 16. Incidence rates of composite suicide outcome over calendar years in the incident acne population, psoriasis population, and the general population with and history of mental health disorders in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

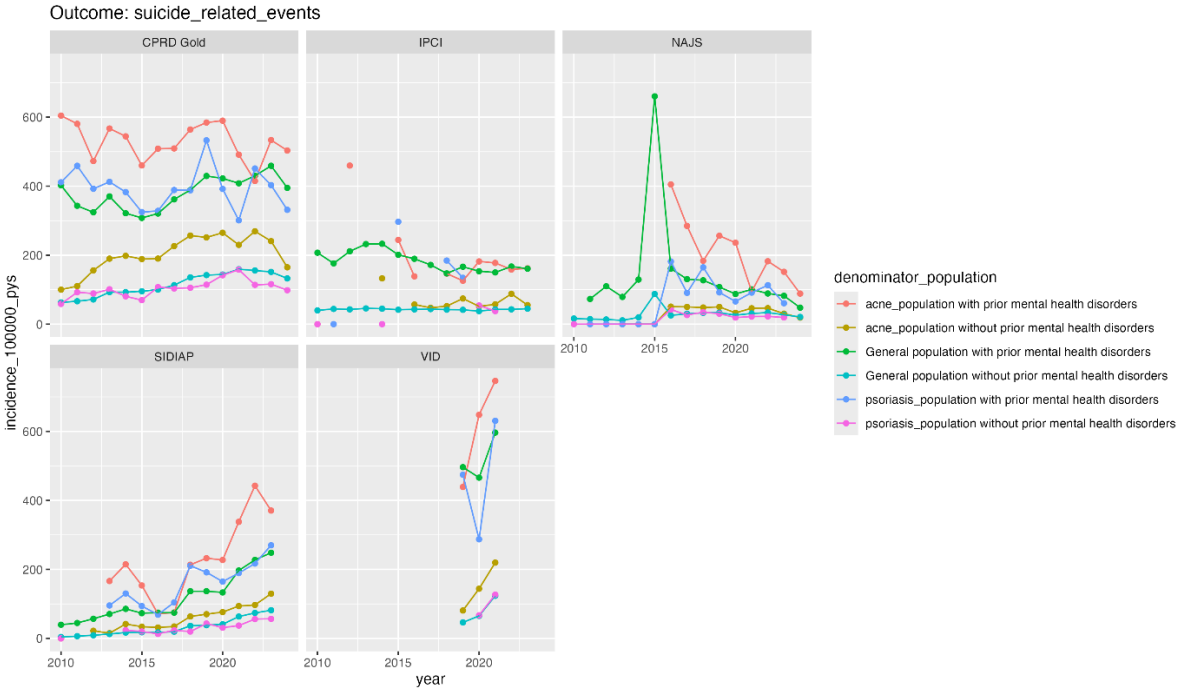


Figure 17. Incidence rates of suicide-related outcome over calendar years in the incident acne population, psoriasis population, and the general population with and without history of mental health disorders in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

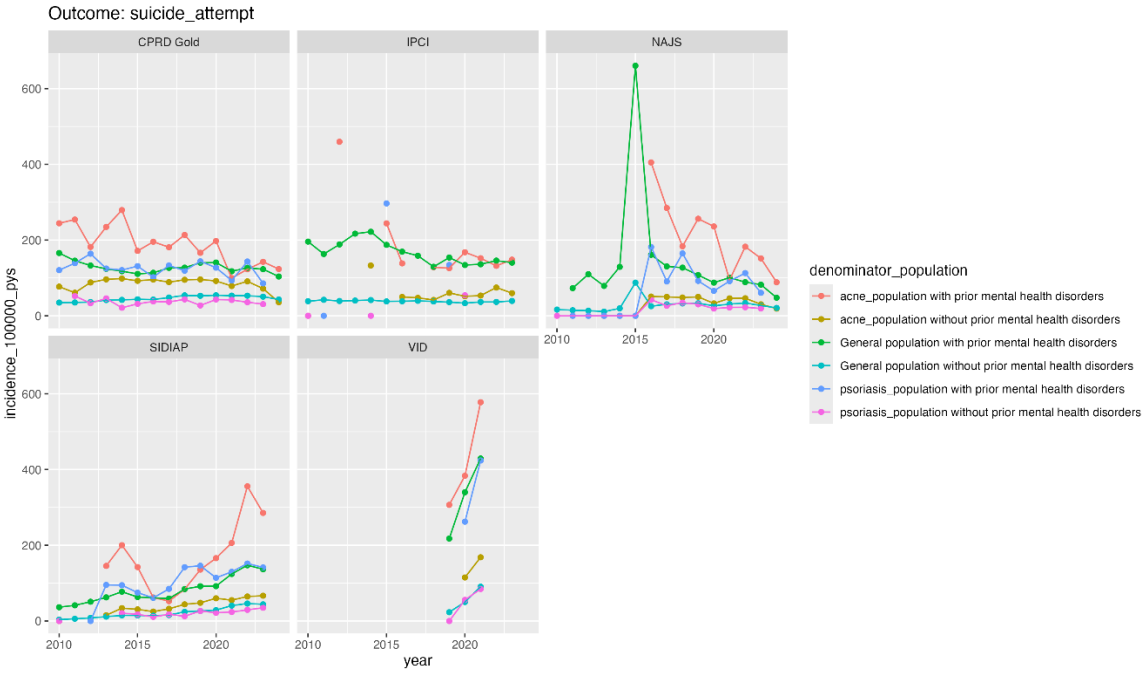


Figure 18. Incidence rates of suicide attempt outcome over calendar years in the incident acne population, psoriasis population, and the general population with and without history of mental health disorders in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

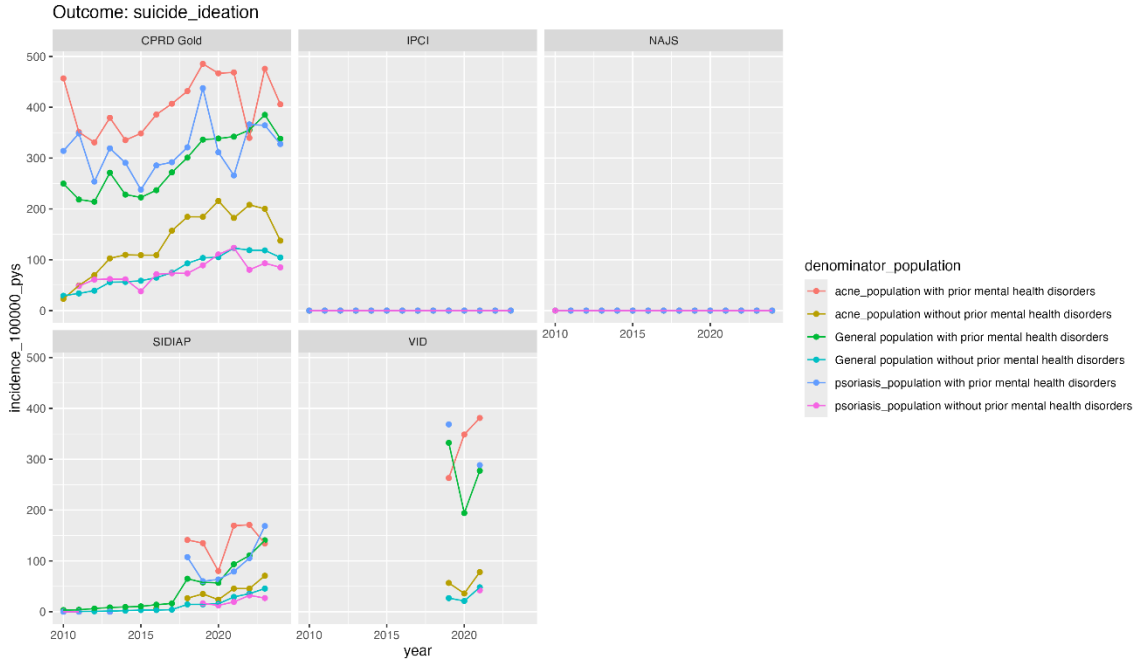


Figure 19. Incidence rates of suicidal ideation outcome over calendar years in the incident acne population, psoriasis population, and the general population with and without history of mental health disorders in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

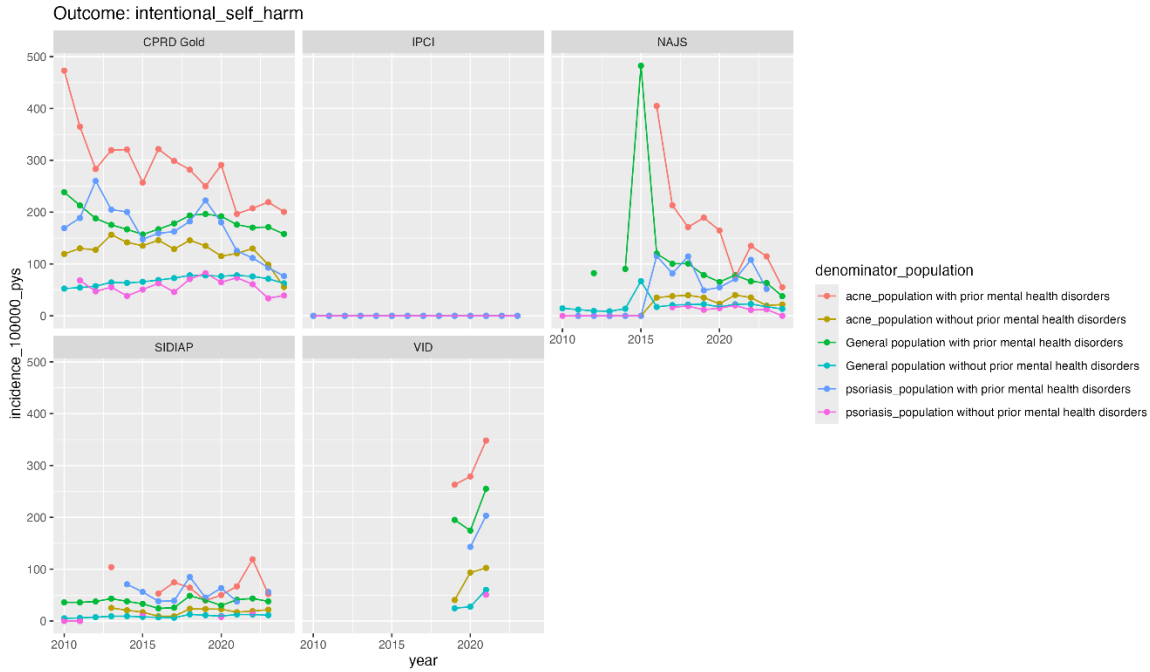


Figure 20. Incidence rates of intentional self-harm outcome over calendar years in the incident acne population, psoriasis population, and the general population with and without history of mental health disorders in CPRD Gold, IPCI, NAJS, SIDIAP, and VID data sources from 2010 to 2024.

13. MANAGEMENT AND REPORTING OF ADVERSE EVENTS/ADVERSE REACTIONS

Adverse events/adverse reactions were not collected or analysed as part of this evaluation. The nature of this non-interventional evaluation, through the use of secondary data, does not fulfil the criteria for reporting adverse events, according to module VI, VI.C.1.2.1.2 of the Good Pharmacovigilance Practices (https://www.ema.europa.eu/en/documents/regulatory-procedural-guideline/guideline-good-pharmacovigilance-practices-gvp-module-vi-collection-management-submission-reports_en.pdf).

Only in case of prospective data collection, there is a need to describe the procedures for the collection, management and reporting of individual cases of adverse events/adverse reactions.

14. DISCUSSION

14.1 Key results

The incidence rate of the different outcomes for suicide and suicide related events showed higher incidence rates in the acne group than in psoriasis or the general population across all databases. For the acne population, the incidence rates of composite suicide per 100,000 PYs over years 2010-2024 ranged from 258.9-363.6 (CPRD Gold), 56.0-126.5 (IPCI), 34.0-77.1 (NAJS), 32.1-161.9 (SIDIAP), and 143.5-337.7 (VID). In individuals with psoriasis, rates over years varied between 166.7-264.8 (CPRD Gold), 30.9-104.3 (IPCI), 33.9-70.1 (NAJS), 40.7-111.5 (SIDIAP), and 129.4-299.5 (VID). The incidence rates were the lowest in the general population and ranged between 146.7-212.6 (CPRD Gold), 49.9-63.8 (IPCI), 26.9-49.3 (NAJS), 15.2-95.0 (SIDIAP), and 130.8-209.3 (VID) over years. Similar patterns were observed for other outcome events like suicide attempts, suicidal ideation, intentional self-harm, and suicide related events. Completed suicide rates were very low in the general population and showed a decline in CPRD Gold (from 0.6/100,000 PYs in 2010 to 0.2 by 2020), while IPCI showed an increase (from 3.1 in 2010 to 9.5 by 2022), with acne and psoriasis populations showing low or no counts throughout.

The analysis of composite suicide outcomes revealed the highest incidence rates among younger age groups (12–17 and 18–30 years) across most databases, with rates declining as age increased. This trend was particularly evident in the CPRD Gold and SIDIAP databases. In CPRD Gold, the highest rates were observed in the psoriasis population (910.8/100,000 PYs for ages 12–17 and 387.7 for ages 18–30) and in the acne population (481.9/100,000 PYs for ages 12–17 and 294.1 for ages 18–30). Similar patterns were seen in SIDIAP, though with lower incidence rates. Across all databases, females consistently exhibited higher incidence rates than males for composite suicide outcomes, with notable differences in the acne and psoriasis populations. In CPRD Gold, females in the acne population had rates of 335.6/100,000 PYs compared to 306.8 for males, while in the psoriasis population, rates were 215.4 for females versus 208.5 for males. This pattern was also observed for other outcomes such as suicide-related outcomes, suicide attempts, suicidal ideation, and intentional self-harm, highlighting the influence of both age and sex on these outcomes.

Incidence rates of suicidality-related outcomes were much higher in individuals with prior mental health disorders, with the acne population consistently showing the highest rates compared to psoriasis and the general population across outcomes. In the CPRD Gold data source, the acne population with prior mental health disorders exhibited rates of composite suicide events starting at

834.5/100,000 PYs in 2010, fluctuating between 600-700/100,000 PYs later on. The incidence rates in the psoriasis population with prior mental health disorders in the CPRD Gold data source showed more stable range of 335-558/100,000 PYs and in the general population 353-495/100,000 PYs. In SIDIAP, similar patterns were noticed, with the acne group reaching incidence rates of 431.3 per 100,000 PYs by 2022, while the incidence rate in the general and psoriasis population remained around 200 per 100,000 PYs. Across other outcomes (suicide-related events, suicide attempt, suicidal ideation, and intentional self-harm), individuals with prior mental health disorders also had markedly higher rates, particularly in the acne group, compared to those without.

14.2 Limitations of the research methods

The study was performed using routinely collected health care data; therefore, data limitations must be considered. In particular, the recording of the outcome events may vary across data sources. While relatively few false positives would be expected, false negatives may be more likely, especially for data sources without patient-level linkage to secondary care data or death registries. This is because the recording of suicide and suicide related events are often under-reported in EHR and primary care because of various factors like social stigma, misclassification of cases (e.g., recorded as accidental), not admission in hospital, the prioritization of physical over mental health symptoms, and cultural attitudes. While linkage to death certification data could improve reporting, and this is the case for NAJS and VID databases, it would still fall short of a true "gold standard," as the deficiencies in coding suicide on death certificates are well documented.(40-44) Any biases arising from incomplete ascertainment of outcomes is not expected to be differential between individuals with and without skin condition.(45)

Additionally, the study period coincided with the COVID-19 pandemic (2020-2022), which likely affected rates for some outcomes, possibly due to factors such as loneliness, anxiety, depression, financial instability, the exacerbation of skin conditions due to stress, limited access to treatment, and reduced social support. For instance, a meta-analysis found higher rates of suicidal ideation (10.81%), suicide attempts (4.68%), and self-harm (9.63%) during the pandemic compared to pre-pandemic levels.(46) Our findings show a slight rise in suicidality-related events in IPCI, SIDIAP, and VID, suggesting the potential pandemic's mental health impact or the continuation of an existing trend.

The results estimated from this study only reflect the populations from the included data sources. Electronic health records have certain inherent limitations because they were collected for clinical use rather than primarily for research use.

While OMOP provides mappings to established vocabularies like SNOMED, inaccuracies or gaps in these mappings can occur, impacting the accuracy and completeness of data in different databases. There is also a possibility of outcome misclassification due to potential coding errors. Still, only databases that fulfil extensive data quality checks with regard to mapping of source data to OMOP are eligible for participation in Darwin EU®.

14.3 Interpretation

The analysis of incidence rates of suicidality-related events in patients with acne and psoriasis compared to the general population reveals significant differences, highlighting the mental health burden of individuals with chronic skin conditions. The incidence rates of suicide outcomes of interest were the highest in the acne population compared to the psoriasis and general populations across different data sources from 2010 to 2024. These trends mirror broader research findings that

link acne with increased mental health challenges in adolescence, a period of vulnerability for suicidal ideation and attempts.(8) There is limited data in the literature regarding the background rates of suicide outcomes in acne populations and most studies focus on broader mental health outcomes or effect of the treatments like isotretinoin.(47, 48)

In a previous population based cohort study from the UK, the incidence rates of suicidality (including suicidal ideation, suicide attempts, or completed suicide) among patients with psoriasis has been reported as 0.9/1,000 PYs, compared to 0.7/1,000 PYs in the general population.(49) It was estimated that 350 new cases of suicidality were attributable to psoriasis each year.(49) Psoriasis patients also show a higher incidence of completed suicide, with a rate of 20.3/100,000 PYs compared to 16.4/100,000 PYs in the general population.(50, 51) In our results from UK database and other data sources, the counts of completed suicide in the psoriasis populations across years were very low or missing. An Italian study found the prevalence of suicidal ideation in psoriasis patients to be around 10%.(52) However, in a multicentre study involving 626 psoriasis patients from 13 European countries, the prevalence of suicidal ideation was significantly higher at 17.3% (compared to 8.3% in healthy controls), with 67.6% of those affected reporting that their suicidal thoughts were directly related to their psoriasis.(2) The incidence rate of suicide attempts in psoriasis patients was reported at 14.3/100,000 PYs, versus 10.0/100,000 PYs in the general population.(50) Our findings showed higher incidence rates since we reported incidence rates range of suicide attempt from 22.0/100,000 PYs in SIDIAP to 197.4/100,000 PYs in VID among individuals with psoriasis.

Interestingly, while results across various databases reveal trends in suicidality-related events, completed suicide counts in acne and psoriasis populations remained very low or non-existent in most data sources. This suggest that while these patients are at risk for suicidal thoughts or suicide attempts, actual completion rates are lower. Low counts however could also be a results of underreporting, often influenced by social stigma, legal issues, or misclassification (e.g., recorded as accidental) as already described in the limitation section of this report.(15)

The observed higher incidence rates of suicidality related events in younger individuals with acne and psoriasis, as well as the elevated rates among females across both conditions can be attributed to the underlying indications and demographic patterns associated with these conditions.. Acne and early onset psoriasis primarily affects adolescents and young adults, a population which is inherently at higher risk for mental health challenges due to hormonal, developmental, and psychosocial stressors, including peer pressure and body image concerns.(55-57).

We also found a disparity in suicidality-related risks between males and females. Males tend to have a higher risk of completed suicide because they often use more lethal/effective methods. Males are less likely to seek help due to cultural expectations about masculinity and mental health issues in men are often underdiagnosed. On the other hand, females have higher rates of non-fatal suicidality related events like attempts, thoughts of suicide, and self-harm. This is partly because females experience more depression and anxiety, express their emotions more openly and are more likely to seek help or share their distress. Additionally, societal pressures like concerns about appearance and fulfilling expected roles impact females more with lower self-esteem related to these skin conditions,(49, 57, 58) and increasing risk of suicide behaviours.(15, 53, 54) These patterns underscore the significant influence of demographic and psychosocial contexts that can mediate the mental health outcomes associated with these conditions.

In individuals with chronic skin conditions, psychiatric comorbidities are prevalent and affecting about 30% of patients.(16, 52) This is particularly observed for individuals with conditions such as

acne and psoriasis. These individuals often face psychosocial distress and mental health issues, such as depression and social anxiety, which are both associated with higher suicide risk.(8) Our results align with previous findings, where we revealed a trend of the highest incidence rates among individuals with acne, particularly those with a history of mental health disorders. This was consistently observed across multiple suicide-related outcomes, including suicide attempts, suicidal ideation, and intentional self-harm, in all analysed databases. In the CPRD Gold database, for instance, the acne population with a history of mental health disorders had the highest incidence of composite suicide events, starting at 834.5/100,000 PYs in 2010 and fluctuating between 600-700/100,000 PYs thereafter. These rates were higher than the rates for the psoriasis and general populations. In SIDIAP, this trend also held with sharper increases over time in individuals with prior mental health disorders. This highlights the significant psychological burden associated with acne, emphasizing the need for mental health support in this population.

The observed differences in incidence rates of suicidality-related events across databases (CPRD Gold, IPCI, NAJS, VID, SIDIAP) were substantial and can be attributed to several factors inherent to the characteristics of each database and the healthcare systems they represent. Variations in data capture methods, such as the primary care focus of CPRD Gold (59) and IPCI (60) versus the integration of primary and secondary care data in SIDIAP,(61) can significantly influence the recording and reporting of suicidality-related events. Additionally, differences in healthcare delivery systems, such as access to mental health services and prescribing practices, can lead to variability in the diagnosis and management of mental health conditions. The time frame of the analysis (2010–2024) may also capture temporal changes in diagnostic coding practices or healthcare utilization across regions. Furthermore, cultural differences in recognizing and addressing mental health concerns may impact the recording of suicidality-related outcomes. These factors collectively underscore the importance of interpreting database-specific results within the context of their healthcare and data recording environments.

Our findings suggest a need for targeted mental health support to address the unique psychosocial challenges faced by acne and psoriasis conditions, potentially mitigating their elevated risk for suicide-related events. Suicide prevention efforts should prioritize age and condition severity with particular attention to young individuals and females who may benefit most from tailored mental health interventions.

14.4 Generalisability

This study included data from five data sources from four different European countries (United Kingdom, the Netherlands, Spain, and Croatia) and included primary and secondary healthcare data; therefore they represent different aspects of the healthcare pathway and each of the data sources have a broad coverage, particularly the large primary care data sources.

While these results may be considered largely representative of individuals newly diagnosed with chronic skin conditions (i.e. acne and psoriasis), results should not be completely generalised to the entire Europe or regions outside of Europe, as differences in population characteristics and guidelines on diagnosis and treatment, may vary by country.

14.5 Other information

There is no further information to report.

15. CONCLUSION

In this disease epidemiology of suicidality-related events in patients with acne, psoriasis, and general population in UK, the Netherlands, Spain, Croatia, we found that individuals with acne consistently exhibited higher incidence rates of suicidality-related outcomes, particularly among younger females, when compared to both the psoriasis and general populations. The incidence rates for suicidality-related outcomes were notably elevated in individuals with prior mental health disorders, especially within the acne cohort, where rates remained significantly higher than those observed in the psoriasis or general populations.

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17. ANNEXES

Appendix I. Table S 1. Definition of acne, psoriasis, suicidality-related events, and mental health disorders diagnosis.

Phenotype	Concept name	Concept ID (including descendants)	Exclude concept ID	Vocabulary
Acne	Acne	141095	42599382, 42598971	SNOMED
Psoriasis	Psoriasis	140168		SNOMED
Depression	Depressive disorder	440383		SNOMED
	Depressed mood	40546087		
Anxiety	Anxiety	441542		SNOMED
Bipolar	Bipolar disorder	436665		SNOMED
Eating disorder	Eating disorder	439002	4143677, 46285098	SNOMED
Psychotic disorder	Psychotic disorder	436073		SNOMED
Suicide	Suicide	440925		SNOMED
Suicide attempt	Suicide attempt	4219484	4206010	SNOMED
	Injury due to suicide attempt	4257906		
	Self-administered poisoning	4181216		
	Intentional overdose	607149		
	Suicide deliberate poisoning	444362		
Suicidal ideation	Threatening suicide	4216115	602870, 4190444	SNOMED
	Suicidal thoughts	4273391		
	Harmful thoughts	4037303		
	Feeling suicidal	4021339		
	At risk for suicide	4021336		
	Suicide risk	37399733		
	Suicide plan	600767		
Intentional self-harm	Self-inflicted injury	439235	440925, 42536693, 42573140, 42596336, 4206010, 42573949	SNOMED
	Self-destructive behaviour	608248		
	Late effect of self-inflicted injury	435446		
	Intentionally harming self	4303690		
	Suicide deliberate poisoning	444362		
	Self-administrated poisoning	4181216		
	Intentional overdose of prescription only medication	44802958		
	Intentional overdose	607149		
Suicide-related events	Suicide	440925	4206010, 602870, 4190444	SNOMED
	Suicide attempt	4219484		
	Injury due to suicide attempt	4257906		
	Self-administered poisoning	4181216		
	Suicide deliberate poisoning	444362		

	Intentional overdose	607149		
	Threatening suicide	4216115		
	Suicidal thoughts	4273391		
	Harmful thoughts	4037303		
	Feeling suicidal	4021339		
	At risk for suicide	4021336		
	Suicide risk	37399733		
	Suicide plan	600767		
Composite outcome	Suicide	440925	4206010, 602870, 4190444, 42536693, 42573140, 42596336	SNOMED
	Suicide attempt	4219484		
	Injury due to suicide attempt	4257906		
	Self-administered poisoning	4181216		
	Suicide deliberate poisoning	444362		
	Intentional overdose	607149		
	Threatening suicide	4216115		
	Suicidal thoughts	4273391		
	Harmful thoughts	4037303		
	Feeling suicidal	4021339		
	At risk for suicide	4021336		
	Suicide risk	37399733		
	Self-inflicted injury	439235		
	Self-destructive behaviour	608248		
	Late effect of self-inflicted injury	435446		
	Intentionally harming self	4303690		
	Suicide plan	600767		

Appendix II. Table S 1. Incidence rates of completed suicide outcome in the general population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Completed suicide	2010	35	5,634,207.9	0.6 [0.4, 0.9]
CPRD Gold	Completed suicide	2011	15	5,538,553.2	0.3 [0.2, 0.4]
CPRD Gold	Completed suicide	2012	10	5,493,010.3	0.2 [0.1, 0.3]
CPRD Gold	Completed suicide	2013	14	5,269,607.3	0.3 [0.1, 0.4]
CPRD Gold	Completed suicide	2014	9	4,907,482.8	0.2 [0.1, 0.3]
CPRD Gold	Completed suicide	2015	14	4,445,821.1	0.3 [0.2, 0.5]
CPRD Gold	Completed suicide	2016	9	3,867,192.7	0.2 [0.1, 0.4]
CPRD Gold	Completed suicide	2017	7	3,524,528.8	0.2 [0.1, 0.4]
CPRD Gold	Completed suicide	2018	7	3,363,252.4	0.2 [0.1, 0.4]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Completed suicide	2019	7	3,233,148.0	0.2 [0.1, 0.4]
CPRD Gold	Completed suicide	2020	5	3,015,286.9	0.2 [0.1, 0.4]
CPRD Gold	Completed suicide	2021	supp	supp	supp
CPRD Gold	Completed suicide	2022	supp	supp	supp
CPRD Gold	Completed suicide	2023	supp	supp	supp
CPRD Gold	Completed suicide	2024	supp	supp	supp
IPCI	Completed suicide	2010	10	324,025.3	3.1 [1.5, 5.7]
IPCI	Completed suicide	2011	15	433,820.0	3.5 [1.9, 5.7]
IPCI	Completed suicide	2012	37	579,754.5	6.4 [4.5, 8.8]
IPCI	Completed suicide	2013	46	610,221.0	7.5 [5.5, 10.1]
IPCI	Completed suicide	2014	30	641,344.5	4.7 [3.2, 6.7]
IPCI	Completed suicide	2015	42	732,029.5	5.7 [4.1, 7.8]
IPCI	Completed suicide	2016	63	894,028.4	7.0 [5.4, 9.0]
IPCI	Completed suicide	2017	68	977,637.7	7.0 [5.4, 8.8]
IPCI	Completed suicide	2018	71	993,385.5	7.1 [5.6, 9.0]
IPCI	Completed suicide	2019	74	1,017,497.7	7.3 [5.7, 9.1]
IPCI	Completed suicide	2020	74	1,054,904.5	7.0 [5.5, 8.8]
IPCI	Completed suicide	2021	85	1,087,808.5	7.8 [6.2, 9.7]
IPCI	Completed suicide	2022	95	998,209.0	9.5 [7.7, 11.6]
IPCI	Completed suicide	2023	86	967,373.2	8.9 [7.1, 11.0]
NAJS	Completed suicide	2017	0	3,418,042.6	0.0 [0.0, 0.1]
NAJS	Completed suicide	2018	0	3,544,600.4	0.0 [0.0, 0.1]
NAJS	Completed suicide	2019	0	3,603,385.6	0.0 [0.0, 0.1]
NAJS	Completed suicide	2020	0	3,653,335.9	0.0 [0.0, 0.1]
NAJS	Completed suicide	2021	0	3,664,503.5	0.0 [0.0, 0.1]
NAJS	Completed suicide	2022	0	3,690,505.0	0.0 [0.0, 0.1]
NAJS	Completed suicide	2023	0	3,721,753.0	0.0 [0.0, 0.1]
NAJS	Completed suicide	2024	0	1,627,402.8	0.0 [0.0, 0.2]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
SIDIAP	Completed suicide	2010	0	5,168,696.0	0.0 [0.0, 0.1]
SIDIAP	Completed suicide	2011	0	5,160,306.7	0.0 [0.0, 0.1]
SIDIAP	Completed suicide	2012	0	5,142,821.3	0.0 [0.0, 0.1]
SIDIAP	Completed suicide	2013	0	5,107,874.4	0.0 [0.0, 0.1]
SIDIAP	Completed suicide	2014	0	5,096,392.9	0.0 [0.0, 0.1]
SIDIAP	Completed suicide	2015	0	5,048,541.4	0.0 [0.0, 0.1]
SIDIAP	Completed suicide	2016	0	5,064,252.8	0.0 [0.0, 0.1]
SIDIAP	Completed suicide	2017	0	5,070,892.9	0.0 [0.0, 0.1]
SIDIAP	Completed suicide	2018	0	5,091,051.8	0.0 [0.0, 0.1]
SIDIAP	Completed suicide	2019	0	5,125,788.4	0.0 [0.0, 0.1]
SIDIAP	Completed suicide	2020	0	5,201,729.2	0.0 [0.0, 0.1]
SIDIAP	Completed suicide	2021	0	5,215,173.3	0.0 [0.0, 0.1]
SIDIAP	Completed suicide	2022	0	5,212,467.5	0.0 [0.0, 0.1]
SIDIAP	Completed suicide	2023	0	2,585,714.8	0.0 [0.0, 0.1]
VID	Completed suicide	2019	0	1,416,526.8	0.0 [0.0, 0.3]
VID	Completed suicide	2020	0	1,474,325.1	0.0 [0.0, 0.3]
VID	Completed suicide	2021	0	1,507,060.5	0.0 [0.0, 0.2]

Appendix II. Table S 2. Incidence rates of the suicide attempt outcome in the general population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Suicide attempt	2010	3,327	5,632,585.9	59.1 [57.1, 61.1]
CPRD Gold	Suicide attempt	2011	3,022	5,534,180.6	54.6 [52.7, 56.6]
CPRD Gold	Suicide attempt	2012	2,889	5,486,352.5	52.7 [50.8, 54.6]
CPRD Gold	Suicide attempt	2013	2,893	5,261,097.3	55.0 [53.0, 57.0]
CPRD Gold	Suicide attempt	2014	2,640	4,897,586.4	53.9 [51.9, 56.0]
CPRD Gold	Suicide attempt	2015	2,378	4,435,201.2	53.6 [51.5, 55.8]
CPRD Gold	Suicide attempt	2016	2,033	3,856,509.9	52.7 [50.4, 55.1]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Suicide attempt	2017	2,060	3,513,642.8	58.6 [56.1, 61.2]
CPRD Gold	Suicide attempt	2018	2,127	3,351,790.8	63.5 [60.8, 66.2]
CPRD Gold	Suicide attempt	2019	2,056	3,221,016.1	63.8 [61.1, 66.7]
CPRD Gold	Suicide attempt	2020	1,948	3,002,824.4	64.9 [62.0, 67.8]
CPRD Gold	Suicide attempt	2021	1,657	2,716,663.8	61.0 [58.1, 64.0]
CPRD Gold	Suicide attempt	2022	1,561	2,533,503.2	61.6 [58.6, 64.7]
CPRD Gold	Suicide attempt	2023	1,440	2,455,544.4	58.6 [55.7, 61.8]
CPRD Gold	Suicide attempt	2024	523	1,051,009.1	49.8 [45.6, 54.2]
IPCI	Suicide attempt	2010	181	323,939.5	55.9 [48.0, 64.6]
IPCI	Suicide attempt	2011	239	433,563.7	55.1 [48.4, 62.6]
IPCI	Suicide attempt	2012	312	579,292.3	53.9 [48.0, 60.2]
IPCI	Suicide attempt	2013	350	609,619.3	57.4 [51.6, 63.8]
IPCI	Suicide attempt	2014	381	640,541.3	59.5 [53.7, 65.8]
IPCI	Suicide attempt	2015	387	731,055.3	52.9 [47.8, 58.5]
IPCI	Suicide attempt	2016	461	892,813.2	51.6 [47.0, 56.6]
IPCI	Suicide attempt	2017	505	976,119.2	51.7 [47.3, 56.5]
IPCI	Suicide attempt	2018	467	991,617.6	47.1 [42.9, 51.6]
IPCI	Suicide attempt	2019	489	1,015,537.2	48.2 [44.0, 52.6]
IPCI	Suicide attempt	2020	462	1,052,714.8	43.9 [40.0, 48.1]
IPCI	Suicide attempt	2021	512	1,085,484.6	47.2 [43.2, 51.4]
IPCI	Suicide attempt	2022	477	995,992.4	47.9 [43.7, 52.4]
IPCI	Suicide attempt	2023	477	965,175.0	49.4 [45.1, 54.1]
NAJS	Suicide attempt	2017	1,579	3,415,728.4	46.2 [44.0, 48.6]
NAJS	Suicide attempt	2018	1,664	3,540,842.7	47.0 [44.8, 49.3]
NAJS	Suicide attempt	2019	1,585	3,598,170.0	44.0 [41.9, 46.3]
NAJS	Suicide attempt	2020	1,273	3,646,938.5	34.9 [33.0, 36.9]
NAJS	Suicide attempt	2021	1,480	3,657,070.3	40.5 [38.4, 42.6]
NAJS	Suicide attempt	2022	1,510	3,681,897.6	41.0 [39.0, 43.1]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
NAJS	Suicide attempt	2023	1,271	3,712,066.6	34.2 [32.4, 36.2]
NAJS	Suicide attempt	2024	394	1,622,921.1	24.3 [21.9, 26.8]
SIDIAP	Suicide attempt	2010	355	5,168,525.2	6.9 [6.2, 7.6]
SIDIAP	Suicide attempt	2011	484	5,159,699.1	9.4 [8.6, 10.3]
SIDIAP	Suicide attempt	2012	636	5,141,669.7	12.4 [11.4, 13.4]
SIDIAP	Suicide attempt	2013	833	5,106,004.1	16.3 [15.2, 17.5]
SIDIAP	Suicide attempt	2014	1,057	5,093,563.6	20.8 [19.5, 22.0]
SIDIAP	Suicide attempt	2015	969	5,044,718.6	19.2 [18.0, 20.5]
SIDIAP	Suicide attempt	2016	933	5,059,464.0	18.4 [17.3, 19.7]
SIDIAP	Suicide attempt	2017	991	5,065,180.8	19.6 [18.4, 20.8]
SIDIAP	Suicide attempt	2018	1,506	5,084,109.2	29.6 [28.1, 31.2]
SIDIAP	Suicide attempt	2019	1,651	5,117,359.6	32.3 [30.7, 33.9]
SIDIAP	Suicide attempt	2020	1,781	5,191,686.2	34.3 [32.7, 35.9]
SIDIAP	Suicide attempt	2021	2,491	5,203,351.8	47.9 [46.0, 49.8]
SIDIAP	Suicide attempt	2022	2,847	5,198,324.6	54.8 [52.8, 56.8]
SIDIAP	Suicide attempt	2023	1,337	2,577,905.6	51.9 [49.1, 54.7]
VID	Suicide attempt	2019	11	14,646.3	75.1 [37.5, 134.4]
VID	Suicide attempt	2020	54	33,552.3	160.9 [120.9, 210.0]
VID	Suicide attempt	2021	122	50,170.3	243.2 [201.9, 290.3]

Appendix II. Table S 3. Incidence rates of suicidal ideation outcome in the general population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Suicide ideation	2010	3,944	5,632,265.7	70.0 [67.9, 72.2]
CPRD Gold	Suicide ideation	2011	3,672	5,533,356.4	66.4 [64.2, 68.5]
CPRD Gold	Suicide ideation	2012	3,768	5,484,845.2	68.7 [66.5, 70.9]
CPRD Gold	Suicide ideation	2013	4,774	5,258,534.2	90.8 [88.2, 93.4]
CPRD Gold	Suicide ideation	2014	4,067	4,893,751.8	83.1 [80.6, 85.7]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Suicide ideation	2015	3,677	4,430,968.9	83.0 [80.3, 85.7]
CPRD Gold	Suicide ideation	2016	3,412	3,852,230.2	88.6 [85.6, 91.6]
CPRD Gold	Suicide ideation	2017	3,535	3,508,689.3	100.8 [97.5, 104.1]
CPRD Gold	Suicide ideation	2018	4,004	3,345,839.1	119.7 [116.0, 123.4]
CPRD Gold	Suicide ideation	2019	4,263	3,213,519.3	132.7 [128.7, 136.7]
CPRD Gold	Suicide ideation	2020	3,992	2,994,378.1	133.3 [129.2, 137.5]
CPRD Gold	Suicide ideation	2021	4,035	2,707,499.3	149.0 [144.5, 153.7]
CPRD Gold	Suicide ideation	2022	3,681	2,523,249.6	145.9 [141.2, 150.7]
CPRD Gold	Suicide ideation	2023	3,615	2,444,215.6	147.9 [143.1, 152.8]
CPRD Gold	Suicide ideation	2024	1,356	1,045,819.7	129.7 [122.8, 136.7]
IPCI	Suicide ideation	2010	0	324,026.9	0.0 [0.0, 1.1]
IPCI	Suicide ideation	2011	0	433,826.9	0.0 [0.0, 0.9]
IPCI	Suicide ideation	2012	0	579,771.3	0.0 [0.0, 0.6]
IPCI	Suicide ideation	2013	0	610,244.6	0.0 [0.0, 0.6]
IPCI	Suicide ideation	2014	0	641,375.1	0.0 [0.0, 0.6]
IPCI	Suicide ideation	2015	0	732,069.1	0.0 [0.0, 0.5]
IPCI	Suicide ideation	2016	0	894,086.6	0.0 [0.0, 0.4]
IPCI	Suicide ideation	2017	0	977,717.9	0.0 [0.0, 0.4]
IPCI	Suicide ideation	2018	0	993,481.4	0.0 [0.0, 0.4]
IPCI	Suicide ideation	2019	0	1,017,618.8	0.0 [0.0, 0.4]
IPCI	Suicide ideation	2020	0	1,055,050.8	0.0 [0.0, 0.3]
IPCI	Suicide ideation	2021	0	1,087,974.2	0.0 [0.0, 0.3]
IPCI	Suicide ideation	2022	0	998,393.2	0.0 [0.0, 0.4]
IPCI	Suicide ideation	2023	0	967,580.9	0.0 [0.0, 0.4]
NAJS	Suicide ideation	2017	0	3,418,042.6	0.0 [0.0, 0.1]
NAJS	Suicide ideation	2018	0	3,544,600.4	0.0 [0.0, 0.1]
NAJS	Suicide ideation	2019	0	3,603,385.6	0.0 [0.0, 0.1]
NAJS	Suicide ideation	2020	0	3,653,335.9	0.0 [0.0, 0.1]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
NAJS	Suicide ideation	2021	0	3,664,503.5	0.0 [0.0, 0.1]
NAJS	Suicide ideation	2022	0	3,690,505.0	0.0 [0.0, 0.1]
NAJS	Suicide ideation	2023	0	3,721,753.0	0.0 [0.0, 0.1]
NAJS	Suicide ideation	2024	0	1,627,402.8	0.0 [0.0, 0.2]
SIDIAP	Suicide ideation	2010	37	5,168,676.1	0.7 [0.5, 1.0]
SIDIAP	Suicide ideation	2011	41	5,160,245.3	0.8 [0.6, 1.1]
SIDIAP	Suicide ideation	2012	70	5,142,711.9	1.4 [1.1, 1.7]
SIDIAP	Suicide ideation	2013	102	5,107,678.7	2.0 [1.6, 2.4]
SIDIAP	Suicide ideation	2014	141	5,096,070.9	2.8 [2.3, 3.3]
SIDIAP	Suicide ideation	2015	199	5,048,059.8	3.9 [3.4, 4.5]
SIDIAP	Suicide ideation	2016	218	5,063,557.9	4.3 [3.8, 4.9]
SIDIAP	Suicide ideation	2017	263	5,069,973.7	5.2 [4.6, 5.9]
SIDIAP	Suicide ideation	2018	969	5,089,501.3	19.0 [17.9, 20.3]
SIDIAP	Suicide ideation	2019	944	5,123,331.6	18.4 [17.3, 19.6]
SIDIAP	Suicide ideation	2020	999	5,198,401.6	19.2 [18.0, 20.4]
SIDIAP	Suicide ideation	2021	1,808	5,210,599.8	34.7 [33.1, 36.3]
SIDIAP	Suicide ideation	2022	2,182	5,206,074.8	41.9 [40.2, 43.7]
SIDIAP	Suicide ideation	2023	1,386	2,581,757.0	53.7 [50.9, 56.6]
VID	Suicide ideation	2019	1,090	1,415,978.2	77.0 [72.5, 81.7]
VID	Suicide ideation	2020	721	1,472,887.0	49.0 [45.4, 52.7]
VID	Suicide ideation	2021	1,267	1,504,745.7	84.2 [79.6, 89.0]

Appendix II. Table S 4. Incidence rates of intentional self-harm outcome in the general population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Intentional self-harm	2010	4,895	5,631,793.7	86.9 [84.5, 89.4]
CPRD Gold	Intentional self-harm	2011	4,558	5,531,990.6	82.4 [80.0, 84.8]
CPRD Gold	Intentional self-harm	2012	4,348	5,482,890.6	79.3 [77.0, 81.7]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Intentional self-harm	2013	4,338	5,256,660.0	82.5 [80.1, 85.0]
CPRD Gold	Intentional self-harm	2014	3,896	4,892,458.8	79.6 [77.2, 82.2]
CPRD Gold	Intentional self-harm	2015	3,507	4,429,602.3	79.2 [76.6, 81.8]
CPRD Gold	Intentional self-harm	2016	3,179	3,850,696.5	82.6 [79.7, 85.5]
CPRD Gold	Intentional self-harm	2017	3,041	3,507,952.5	86.7 [83.6, 89.8]
CPRD Gold	Intentional self-harm	2018	3,111	3,345,902.9	93.0 [89.7, 96.3]
CPRD Gold	Intentional self-harm	2019	2,982	3,214,770.3	92.8 [89.5, 96.1]
CPRD Gold	Intentional self-harm	2020	2,710	2,996,495.2	90.4 [87.1, 93.9]
CPRD Gold	Intentional self-harm	2021	2,432	2,710,330.8	89.7 [86.2, 93.4]
CPRD Gold	Intentional self-harm	2022	2,195	2,527,316.6	86.9 [83.3, 90.6]
CPRD Gold	Intentional self-harm	2023	2,023	2,449,728.9	82.6 [79.0, 86.3]
CPRD Gold	Intentional self-harm	2024	766	1,048,444.0	73.1 [68.0, 78.4]
IPCI	Intentional self-harm	2010	0	324,026.9	0.0 [0.0, 1.1]
IPCI	Intentional self-harm	2011	0	433,826.9	0.0 [0.0, 0.9]
IPCI	Intentional self-harm	2012	0	579,771.3	0.0 [0.0, 0.6]
IPCI	Intentional self-harm	2013	0	610,244.6	0.0 [0.0, 0.6]
IPCI	Intentional self-harm	2014	0	641,375.1	0.0 [0.0, 0.6]
IPCI	Intentional self-harm	2015	0	732,069.1	0.0 [0.0, 0.5]
IPCI	Intentional self-harm	2016	0	894,086.6	0.0 [0.0, 0.4]
IPCI	Intentional self-harm	2017	0	977,717.9	0.0 [0.0, 0.4]
IPCI	Intentional self-harm	2018	0	993,481.4	0.0 [0.0, 0.4]
IPCI	Intentional self-harm	2019	0	1,017,618.8	0.0 [0.0, 0.4]
IPCI	Intentional self-harm	2020	0	1,055,050.8	0.0 [0.0, 0.3]
IPCI	Intentional self-harm	2021	0	1,087,974.2	0.0 [0.0, 0.3]
IPCI	Intentional self-harm	2022	0	998,393.2	0.0 [0.0, 0.4]
IPCI	Intentional self-harm	2023	0	967,580.9	0.0 [0.0, 0.4]
NAJS	Intentional self-harm	2017	1,138	3,416,365.7	33.3 [31.4, 35.3]
NAJS	Intentional self-harm	2018	1,189	3,541,853.4	33.6 [31.7, 35.5]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
NAJS	Intentional self-harm	2019	1,103	3,599,583.7	30.6 [28.9, 32.5]
NAJS	Intentional self-harm	2020	872	3,648,692.8	23.9 [22.3, 25.5]
NAJS	Intentional self-harm	2021	1,096	3,659,099.4	30.0 [28.2, 31.8]
NAJS	Intentional self-harm	2022	1,053	3,684,210.7	28.6 [26.9, 30.4]
NAJS	Intentional self-harm	2023	865	3,714,682.8	23.3 [21.8, 24.9]
NAJS	Intentional self-harm	2024	267	1,624,134.9	16.4 [14.5, 18.5]
SIDIAP	Intentional self-harm	2010	425	5,168,491.8	8.2 [7.5, 9.0]
SIDIAP	Intentional self-harm	2011	456	5,159,680.4	8.8 [8.0, 9.7]
SIDIAP	Intentional self-harm	2012	531	5,141,732.6	10.3 [9.5, 11.2]
SIDIAP	Intentional self-harm	2013	633	5,106,284.7	12.4 [11.4, 13.4]
SIDIAP	Intentional self-harm	2014	611	5,094,292.4	12.0 [11.1, 13.0]
SIDIAP	Intentional self-harm	2015	523	5,046,013.6	10.4 [9.5, 11.3]
SIDIAP	Intentional self-harm	2016	442	5,061,419.3	8.7 [7.9, 9.6]
SIDIAP	Intentional self-harm	2017	406	5,067,850.8	8.0 [7.3, 8.8]
SIDIAP	Intentional self-harm	2018	817	5,087,655.5	16.1 [15.0, 17.2]
SIDIAP	Intentional self-harm	2019	702	5,121,939.3	13.7 [12.7, 14.8]
SIDIAP	Intentional self-harm	2020	588	5,197,484.7	11.3 [10.4, 12.3]
SIDIAP	Intentional self-harm	2021	785	5,210,479.3	15.1 [14.0, 16.2]
SIDIAP	Intentional self-harm	2022	794	5,207,200.3	15.2 [14.2, 16.3]
SIDIAP	Intentional self-harm	2023	348	2,582,929.3	13.5 [12.1, 15.0]
VID	Intentional self-harm	2019	744	1,416,160.7	52.5 [48.8, 56.5]
VID	Intentional self-harm	2020	754	1,473,241.3	51.2 [47.6, 55.0]
VID	Intentional self-harm	2021	1,368	1,504,972.7	90.9 [86.1, 95.8]

Appendix II. Table S 5. Incidence rates of suicide-related events outcome in the general population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Suicide-related events	2010	7,077	5,630,731.2	125.7 [122.8, 128.6]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Suicide-related events	2011	6,372	5,529,316.5	115.2 [112.4, 118.1]
CPRD Gold	Suicide-related events	2012	6,256	5,478,839.9	114.2 [111.4, 117.0]
CPRD Gold	Suicide-related events	2013	7,232	5,250,988.5	137.7 [134.6, 140.9]
CPRD Gold	Suicide-related events	2014	6,269	4,885,102.1	128.3 [125.2, 131.5]
CPRD Gold	Suicide-related events	2015	5,604	4,421,792.6	126.7 [123.4, 130.1]
CPRD Gold	Suicide-related events	2016	5,020	3,843,094.1	130.6 [127.0, 134.3]
CPRD Gold	Suicide-related events	2017	5,101	3,499,533.8	145.8 [141.8, 149.8]
CPRD Gold	Suicide-related events	2018	5,602	3,336,360.5	167.9 [163.5, 172.4]
CPRD Gold	Suicide-related events	2019	5,703	3,203,662.8	178.0 [173.4, 182.7]
CPRD Gold	Suicide-related events	2020	5,299	2,984,426.1	177.6 [172.8, 182.4]
CPRD Gold	Suicide-related events	2021	5,091	2,697,693.6	188.7 [183.6, 194.0]
CPRD Gold	Suicide-related events	2022	4,699	2,513,680.5	186.9 [181.6, 192.4]
CPRD Gold	Suicide-related events	2023	4,509	2,434,802.3	185.2 [179.8, 190.7]
CPRD Gold	Suicide-related events	2024	1,675	1,041,808.4	160.8 [153.2, 168.7]
IPCI	Suicide-related events	2010	189	323,938.3	58.3 [50.3, 67.3]
IPCI	Suicide-related events	2011	252	433,558.0	58.1 [51.2, 65.8]
IPCI	Suicide-related events	2012	345	579,278.7	59.6 [53.4, 66.2]
IPCI	Suicide-related events	2013	389	609,599.2	63.8 [57.6, 70.5]
IPCI	Suicide-related events	2014	407	640,515.6	63.5 [57.5, 70.0]
IPCI	Suicide-related events	2015	422	731,023.5	57.7 [52.4, 63.5]
IPCI	Suicide-related events	2016	515	892,765.0	57.7 [52.8, 62.9]
IPCI	Suicide-related events	2017	554	976,054.1	56.8 [52.1, 61.7]
IPCI	Suicide-related events	2018	524	991,541.0	52.8 [48.4, 57.6]
IPCI	Suicide-related events	2019	553	1,015,434.7	54.5 [50.0, 59.2]
IPCI	Suicide-related events	2020	525	1,052,590.4	49.9 [45.7, 54.3]
IPCI	Suicide-related events	2021	588	1,085,343.5	54.2 [49.9, 58.7]
IPCI	Suicide-related events	2022	556	995,836.8	55.8 [51.3, 60.7]
IPCI	Suicide-related events	2023	547	965,000.6	56.7 [52.0, 61.6]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
NAJS	Suicide-related events	2017	1,579	3,415,728.4	46.2 [44.0, 48.6]
NAJS	Suicide-related events	2018	1,664	3,540,842.7	47.0 [44.8, 49.3]
NAJS	Suicide-related events	2019	1,585	3,598,170.0	44.0 [41.9, 46.3]
NAJS	Suicide-related events	2020	1,273	3,646,938.5	34.9 [33.0, 36.9]
NAJS	Suicide-related events	2021	1,480	3,657,070.3	40.5 [38.4, 42.6]
NAJS	Suicide-related events	2022	1,510	3,681,897.6	41.0 [39.0, 43.1]
NAJS	Suicide-related events	2023	1,271	3,712,066.6	34.2 [32.4, 36.2]
NAJS	Suicide-related events	2024	394	1,622,921.1	24.3 [21.9, 26.8]
SIDIAP	Suicide-related events	2010	391	5,168,505.3	7.6 [6.8, 8.4]
SIDIAP	Suicide-related events	2011	522	5,159,640.2	10.1 [9.3, 11.0]
SIDIAP	Suicide-related events	2012	705	5,141,564.9	13.7 [12.7, 14.8]
SIDIAP	Suicide-related events	2013	930	5,105,815.8	18.2 [17.1, 19.4]
SIDIAP	Suicide-related events	2014	1,188	5,093,256.8	23.3 [22.0, 24.7]
SIDIAP	Suicide-related events	2015	1,153	5,044,263.3	22.9 [21.6, 24.2]
SIDIAP	Suicide-related events	2016	1,138	5,058,809.1	22.5 [21.2, 23.8]
SIDIAP	Suicide-related events	2017	1,240	5,064,314.7	24.5 [23.1, 25.9]
SIDIAP	Suicide-related events	2018	2,306	5,082,703.7	45.4 [43.5, 47.3]
SIDIAP	Suicide-related events	2019	2,404	5,115,219.0	47.0 [45.1, 48.9]
SIDIAP	Suicide-related events	2020	2,541	5,188,887.7	49.0 [47.1, 50.9]
SIDIAP	Suicide-related events	2021	3,889	5,199,596.2	74.8 [72.5, 77.2]
SIDIAP	Suicide-related events	2022	4,507	5,193,184.8	86.8 [84.3, 89.4]
SIDIAP	Suicide-related events	2023	2,464	2,574,732.9	95.7 [92.0, 99.6]
VID	Suicide-related events	2019	1,701	1,415,714.4	120.2 [114.5, 126.0]
VID	Suicide-related events	2020	1,904	1,471,701.6	129.4 [123.6, 135.3]
VID	Suicide-related events	2021	2,971	1,502,171.1	197.8 [190.7, 205.0]

Appendix II. Table S 6. Incidence rates of composite suicide outcome in the general population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Composite suicide	2010	9,119	5,629,695.1	162.0 [158.7, 165.3]
CPRD Gold	Composite suicide	2011	8,329	5,526,509.7	150.7 [147.5, 154.0]
CPRD Gold	Composite suicide	2012	8,029	5,474,502.5	146.7 [143.5, 149.9]
CPRD Gold	Composite suicide	2013	8,918	5,245,546.6	170.0 [166.5, 173.6]
CPRD Gold	Composite suicide	2014	7,684	4,878,948.8	157.5 [154.0, 161.1]
CPRD Gold	Composite suicide	2015	6,865	4,415,260.6	155.5 [151.8, 159.2]
CPRD Gold	Composite suicide	2016	6,157	3,836,564.5	160.5 [156.5, 164.5]
CPRD Gold	Composite suicide	2017	5,989	3,493,300.5	171.4 [167.1, 175.8]
CPRD Gold	Composite suicide	2018	6,488	3,330,137.1	194.8 [190.1, 199.6]
CPRD Gold	Composite suicide	2019	6,563	3,197,194.6	205.3 [200.3, 210.3]
CPRD Gold	Composite suicide	2020	5,982	2,977,978.1	200.9 [195.8, 206.0]
CPRD Gold	Composite suicide	2021	5,722	2,691,405.7	212.6 [207.1, 218.2]
CPRD Gold	Composite suicide	2022	5,275	2,507,598.8	210.4 [204.7, 216.1]
CPRD Gold	Composite suicide	2023	5,004	2,429,056.2	206.0 [200.3, 211.8]
CPRD Gold	Composite suicide	2024	1,858	1,039,352.0	178.8 [170.7, 187.1]
IPCI	Composite suicide	2010	189	323,938.3	58.3 [50.3, 67.3]
IPCI	Composite suicide	2011	252	433,558.0	58.1 [51.2, 65.8]
IPCI	Composite suicide	2012	345	579,278.7	59.6 [53.4, 66.2]
IPCI	Composite suicide	2013	389	609,599.2	63.8 [57.6, 70.5]
IPCI	Composite suicide	2014	407	640,515.6	63.5 [57.5, 70.0]
IPCI	Composite suicide	2015	422	731,023.5	57.7 [52.4, 63.5]
IPCI	Composite suicide	2016	515	892,765.0	57.7 [52.8, 62.9]
IPCI	Composite suicide	2017	554	976,054.1	56.8 [52.1, 61.7]
IPCI	Composite suicide	2018	524	991,541.0	52.8 [48.4, 57.6]
IPCI	Composite suicide	2019	553	1,015,434.7	54.5 [50.0, 59.2]
IPCI	Composite suicide	2020	525	1,052,590.4	49.9 [45.7, 54.3]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
IPCI	Composite suicide	2021	588	1,085,343.5	54.2 [49.9, 58.7]
IPCI	Composite suicide	2022	556	995,836.8	55.8 [51.3, 60.7]
IPCI	Composite suicide	2023	547	965,000.6	56.7 [52.0, 61.6]
NAJS	Composite suicide	2017	1,653	3,415,634.6	48.4 [46.1, 50.8]
NAJS	Composite suicide	2018	1,747	3,540,667.8	49.3 [47.1, 51.7]
NAJS	Composite suicide	2019	1,657	3,597,928.3	46.1 [43.9, 48.3]
NAJS	Composite suicide	2020	1,336	3,646,635.6	36.6 [34.7, 38.7]
NAJS	Composite suicide	2021	1,607	3,656,687.5	43.9 [41.8, 46.1]
NAJS	Composite suicide	2022	1,626	3,681,397.1	44.2 [42.0, 46.4]
NAJS	Composite suicide	2023	1,385	3,711,445.0	37.3 [35.4, 39.3]
NAJS	Composite suicide	2024	436	1,622,618.2	26.9 [24.4, 29.5]
SIDIAP	Composite suicide	2010	788	5,168,314.6	15.2 [14.2, 16.3]
SIDIAP	Composite suicide	2011	929	5,159,065.1	18.0 [16.9, 19.2]
SIDIAP	Composite suicide	2012	1,176	5,140,582.5	22.9 [21.6, 24.2]
SIDIAP	Composite suicide	2013	1,507	5,104,396.2	29.5 [28.1, 31.1]
SIDIAP	Composite suicide	2014	1,760	5,091,365.5	34.6 [33.0, 36.2]
SIDIAP	Composite suicide	2015	1,636	5,041,983.5	32.4 [30.9, 34.1]
SIDIAP	Composite suicide	2016	1,538	5,056,268.9	30.4 [28.9, 32.0]
SIDIAP	Composite suicide	2017	1,595	5,061,603.2	31.5 [30.0, 33.1]
SIDIAP	Composite suicide	2018	2,529	5,079,963.8	49.8 [47.9, 51.8]
SIDIAP	Composite suicide	2019	2,564	5,112,533.5	50.2 [48.2, 52.1]
SIDIAP	Composite suicide	2020	2,558	5,186,322.3	49.3 [47.4, 51.3]
SIDIAP	Composite suicide	2021	3,868	5,197,175.0	74.4 [72.1, 76.8]
SIDIAP	Composite suicide	2022	4,482	5,190,907.7	86.3 [83.8, 88.9]
SIDIAP	Composite suicide	2023	2,445	2,573,652.1	95.0 [91.3, 98.8]
VID	Composite suicide	2019	1,852	1,415,634.9	130.8 [124.9, 136.9]
VID	Composite suicide	2020	1,994	1,471,513.1	135.5 [129.6, 141.6]
VID	Composite suicide	2021	3,144	1,501,852.2	209.3 [202.1, 216.8]

Appendix II. Table S 7. Incidence rates of completed suicide outcome in the acne population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Completed suicide	2010	supp	supp	supp
CPRD Gold	Completed suicide	2011	0	75,449.6	0.0 [0.0, 4.9]
CPRD Gold	Completed suicide	2012	0	108,499.0	0.0 [0.0, 3.4]
CPRD Gold	Completed suicide	2013	supp	supp	supp
CPRD Gold	Completed suicide	2014	0	142,065.8	0.0 [0.0, 2.6]
CPRD Gold	Completed suicide	2015	0	140,819.7	0.0 [0.0, 2.6]
CPRD Gold	Completed suicide	2016	0	130,333.0	0.0 [0.0, 2.8]
CPRD Gold	Completed suicide	2017	supp	supp	supp
CPRD Gold	Completed suicide	2018	supp	supp	supp
CPRD Gold	Completed suicide	2019	supp	supp	supp
CPRD Gold	Completed suicide	2020	supp	supp	supp
CPRD Gold	Completed suicide	2021	0	104,727.9	0.0 [0.0, 3.5]
CPRD Gold	Completed suicide	2022	0	96,380.9	0.0 [0.0, 3.8]
CPRD Gold	Completed suicide	2023	0	92,338.9	0.0 [0.0, 4.0]
CPRD Gold	Completed suicide	2024	0	39,260.5	0.0 [0.0, 9.4]
IPCI	Completed suicide	2010	0	1,752.2	0.0 [0.0, 210.5]
IPCI	Completed suicide	2011	0	4,713.7	0.0 [0.0, 78.3]
IPCI	Completed suicide	2012	supp	supp	supp
IPCI	Completed suicide	2013	supp	supp	supp
IPCI	Completed suicide	2014	0	12,224.1	0.0 [0.0, 30.2]
IPCI	Completed suicide	2015	supp	supp	supp
IPCI	Completed suicide	2016	supp	supp	supp
IPCI	Completed suicide	2017	supp	supp	supp
IPCI	Completed suicide	2018	supp	supp	supp
IPCI	Completed suicide	2019	supp	supp	supp
IPCI	Completed suicide	2020	supp	supp	supp

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
IPCI	Completed suicide	2021	supp	supp	supp
IPCI	Completed suicide	2022	5	30,480.4	16.4 [5.3, 38.3]
IPCI	Completed suicide	2023	supp	supp	supp
IPCI	Completed suicide	2024			
NAJS	Completed suicide	2017	0	63,612.9	0.0 [0.0, 5.8]
NAJS	Completed suicide	2018	0	89,086.1	0.0 [0.0, 4.1]
NAJS	Completed suicide	2019	0	110,621.9	0.0 [0.0, 3.3]
NAJS	Completed suicide	2020	0	128,978.7	0.0 [0.0, 2.9]
NAJS	Completed suicide	2021	0	145,211.6	0.0 [0.0, 2.5]
NAJS	Completed suicide	2022	0	161,807.2	0.0 [0.0, 2.3]
NAJS	Completed suicide	2023	0	177,647.1	0.0 [0.0, 2.1]
NAJS	Completed suicide	2024	0	82,726.9	0.0 [0.0, 4.5]
SIDIAP	Completed suicide	2010	0	6,569.2	0.0 [0.0, 56.2]
SIDIAP	Completed suicide	2011	0	18,722.9	0.0 [0.0, 19.7]
SIDIAP	Completed suicide	2012	0	30,389.1	0.0 [0.0, 12.1]
SIDIAP	Completed suicide	2013	0	44,471.0	0.0 [0.0, 8.3]
SIDIAP	Completed suicide	2014	0	59,901.8	0.0 [0.0, 6.2]
SIDIAP	Completed suicide	2015	0	74,253.9	0.0 [0.0, 5.0]
SIDIAP	Completed suicide	2016	0	87,843.1	0.0 [0.0, 4.2]
SIDIAP	Completed suicide	2017	0	100,598.0	0.0 [0.0, 3.7]
SIDIAP	Completed suicide	2018	0	113,452.6	0.0 [0.0, 3.3]
SIDIAP	Completed suicide	2019	0	126,423.9	0.0 [0.0, 2.9]
SIDIAP	Completed suicide	2020	0	138,591.8	0.0 [0.0, 2.7]
SIDIAP	Completed suicide	2021	0	152,014.4	0.0 [0.0, 2.4]
SIDIAP	Completed suicide	2022	0	166,455.9	0.0 [0.0, 2.2]
SIDIAP	Completed suicide	2023	0	87,155.2	0.0 [0.0, 4.2]
VID	Completed suicide	2019	0	14,652.8	0.0 [0.0, 25.2]
VID	Completed suicide	2020	0	33,604.2	0.0 [0.0, 11.0]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
VID	Completed suicide	2021	0	50,349.9	0.0 [0.0, 7.3]

Appendix II. Table S 8. Incidence rates of the suicide attempt outcome in the acne population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Suicide attempt	2010	35	32,112.8	109.0 [75.9, 151.6]
CPRD Gold	Suicide attempt	2011	74	75,316.9	98.3 [77.1, 123.3]
CPRD Gold	Suicide attempt	2012	115	108,223.1	106.3 [87.7, 127.6]
CPRD Gold	Suicide attempt	2013	160	130,109.6	123.0 [104.7, 143.6]
CPRD Gold	Suicide attempt	2014	189	141,429.6	133.6 [115.3, 154.1]
CPRD Gold	Suicide attempt	2015	151	140,072.8	107.8 [91.3, 126.4]
CPRD Gold	Suicide attempt	2016	149	129,514.8	115.0 [97.3, 135.1]
CPRD Gold	Suicide attempt	2017	134	125,482.1	106.8 [89.5, 126.5]
CPRD Gold	Suicide attempt	2018	147	124,157.8	118.4 [100.0, 139.2]
CPRD Gold	Suicide attempt	2019	136	123,501.1	110.1 [92.4, 130.3]
CPRD Gold	Suicide attempt	2020	131	115,684.1	113.2 [94.7, 134.4]
CPRD Gold	Completed suicide	2021	86	103,663.4	83.0 [66.4, 102.5]
CPRD Gold	Suicide attempt	2022	93	95,315.3	97.6 [78.8, 119.5]
CPRD Gold	Suicide attempt	2023	79	91,270.7	86.6 [68.5, 107.9]
CPRD Gold	Suicide attempt	2024	21	38,799.3	54.1 [33.5, 82.7]
IPCI	Suicide attempt	2010	supp	supp	supp
IPCI	Suicide attempt	2011	supp	supp	supp
IPCI	Suicide attempt	2012	10	7,906.2	126.5 [60.7, 232.6]
IPCI	Suicide attempt	2013	5	9,747.5	51.3 [16.7, 119.7]
IPCI	Suicide attempt	2014	15	12,187.8	123.1 [68.9, 203.0]
IPCI	Suicide attempt	2015	8	14,334.1	55.8 [24.1, 110.0]
IPCI	Suicide attempt	2016	12	17,641.3	68.0 [35.1, 118.8]
IPCI	Suicide attempt	2017	11	21,439.6	51.3 [25.6, 91.8]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
IPCI	Suicide attempt	2018	15	24,589.7	61.0 [34.1, 100.6]
IPCI	Suicide attempt	2019	21	27,857.4	75.4 [46.7, 115.2]
IPCI	Suicide attempt	2020	24	30,421.2	78.9 [50.5, 117.4]
IPCI	Suicide attempt	2021	25	32,214.8	77.6 [50.2, 114.6]
IPCI	Suicide attempt	2022	27	30,334.3	89.0 [58.7, 129.5]
IPCI	Suicide attempt	2023	24	29,123.4	82.4 [52.8, 122.6]
NAJS	Suicide attempt	2017	45	63,542.0	70.8 [51.7, 94.8]
NAJS	Suicide attempt	2018	54	88,930.5	60.7 [45.6, 79.2]
NAJS	Suicide attempt	2019	77	110,368.5	69.8 [55.1, 87.2]
NAJS	Suicide attempt	2020	68	128,621.1	52.9 [41.1, 67.0]
NAJS	Suicide attempt	2021	74	144,751.0	51.1 [40.1, 64.2]
NAJS	Suicide attempt	2022	98	161,222.1	60.8 [49.3, 74.1]
NAJS	Suicide attempt	2023	77	176,934.1	43.5 [34.3, 54.4]
NAJS	Suicide attempt	2024	22	82,378.0	26.7 [16.7, 40.4]
SIDIAP	Suicide attempt	2010	0	6,569.2	0.0 [0.0, 56.2]
SIDIAP	Suicide attempt	2011	supp	supp	supp
SIDIAP	Suicide attempt	2012	5	30,377.9	16.5 [5.3, 38.4]
SIDIAP	Suicide attempt	2013	13	44,451.1	29.2 [15.6, 50.0]
SIDIAP	Suicide attempt	2014	32	59,852.7	53.5 [36.6, 75.5]
SIDIAP	Suicide attempt	2015	33	74,162.4	44.5 [30.6, 62.5]
SIDIAP	Suicide attempt	2016	26	87,704.9	29.6 [19.4, 43.4]
SIDIAP	Suicide attempt	2017	35	100,413.2	34.9 [24.3, 48.5]
SIDIAP	Suicide attempt	2018	56	113,199.7	49.5 [37.4, 64.2]
SIDIAP	Suicide attempt	2019	76	126,084.2	60.3 [47.5, 75.4]
SIDIAP	Suicide attempt	2020	104	138,137.5	75.3 [61.5, 91.2]
SIDIAP	Suicide attempt	2021	117	151,425.3	77.3 [63.9, 92.6]
SIDIAP	Suicide attempt	2022	180	165,682.7	108.6 [93.3, 125.7]
SIDIAP	Suicide attempt	2023	87	86,695.0	100.4 [80.4, 123.8]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
VID	Suicide attempt	2019	11	14,646.3	75.1 [37.5, 134.4]
VID	Suicide attempt	2020	54	33,552.3	160.9 [120.9, 210.0]
VID	Suicide attempt	2021	122	50,170.3	243.2 [201.9, 290.3]

Appendix II. Table S 9. Incidence rates of suicide ideation outcome in the acne population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Suicide ideation	2010	34	32,108.9	105.9 [73.3, 148.0]
CPRD Gold	Suicide ideation	2011	81	75,326.6	107.5 [85.4, 133.7]
CPRD Gold	Suicide ideation	2012	130	108,222.0	120.1 [100.4, 142.6]
CPRD Gold	Suicide ideation	2013	203	130,084.2	156.1 [135.3, 179.1]
CPRD Gold	Suicide ideation	2014	217	141,359.7	153.5 [133.8, 175.3]
CPRD Gold	Suicide ideation	2015	218	139,956.2	155.8 [135.8, 177.9]
CPRD Gold	Suicide ideation	2016	210	129,390.4	162.3 [141.1, 185.8]
CPRD Gold	Suicide ideation	2017	257	125,276.7	205.1 [180.8, 231.8]
CPRD Gold	Suicide ideation	2018	288	123,848.4	232.5 [206.5, 261.0]
CPRD Gold	Suicide ideation	2019	300	123,023.1	243.9 [217.0, 273.1]
CPRD Gold	Suicide ideation	2020	306	115,100.8	265.9 [236.9, 297.4]
CPRD Gold	Suicide ideation	2021	247	102,999.8	239.8 [210.8, 271.7]
CPRD Gold	Suicide ideation	2022	222	94,603.4	234.7 [204.8, 267.6]
CPRD Gold	Suicide ideation	2023	232	90,434.7	256.5 [224.6, 291.8]
CPRD Gold	Suicide ideation	2024	74	38,415.7	192.6 [151.3, 241.8]
IPCI	Suicide ideation	2010	0	1,752.2	0.0 [0.0, 210.5]
IPCI	Suicide ideation	2011	0	4,713.7	0.0 [0.0, 78.3]
IPCI	Suicide ideation	2012	0	7,922.3	0.0 [0.0, 46.6]
IPCI	Suicide ideation	2013	0	9,772.5	0.0 [0.0, 37.7]
IPCI	Suicide ideation	2014	0	12,226.1	0.0 [0.0, 30.2]
IPCI	Suicide ideation	2015	0	14,375.7	0.0 [0.0, 25.7]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
IPCI	Suicide ideation	2016	0	17,693.9	0.0 [0.0, 20.8]
IPCI	Suicide ideation	2017	0	21,513.4	0.0 [0.0, 17.1]
IPCI	Suicide ideation	2018	0	24,675.8	0.0 [0.0, 14.9]
IPCI	Suicide ideation	2019	0	27,959.9	0.0 [0.0, 13.2]
IPCI	Suicide ideation	2020	0	30,543.4	0.0 [0.0, 12.1]
IPCI	Suicide ideation	2021	0	32,361.4	0.0 [0.0, 11.4]
IPCI	Suicide ideation	2022	0	30,490.3	0.0 [0.0, 12.1]
IPCI	Suicide ideation	2023	0	29,284.1	0.0 [0.0, 12.6]
NAJS	Suicide ideation	2017	0	63,612.9	0.0 [0.0, 5.8]
NAJS	Suicide ideation	2018	0	89,086.1	0.0 [0.0, 4.1]
NAJS	Suicide ideation	2019	0	110,621.9	0.0 [0.0, 3.3]
NAJS	Suicide ideation	2020	0	128,978.7	0.0 [0.0, 2.9]
NAJS	Suicide ideation	2021	0	145,211.6	0.0 [0.0, 2.5]
NAJS	Suicide ideation	2022	0	161,807.2	0.0 [0.0, 2.3]
NAJS	Suicide ideation	2023	0	177,647.1	0.0 [0.0, 2.1]
NAJS	Suicide ideation	2024	0	82,726.9	0.0 [0.0, 4.5]
SIDIAP	Suicide ideation	2010	0	6,569.2	0.0 [0.0, 56.2]
SIDIAP	Suicide ideation	2011	0	18,722.9	0.0 [0.0, 19.7]
SIDIAP	Suicide ideation	2012	supp	supp	supp
SIDIAP	Suicide ideation	2013	supp	supp	supp
SIDIAP	Suicide ideation	2014	5	59,894.1	8.3 [2.7, 19.5]
SIDIAP	Suicide ideation	2015	supp	supp	supp
SIDIAP	Suicide ideation	2016	7	87,821.0	8.0 [3.2, 16.4]
SIDIAP	Suicide ideation	2017	5	100,566.2	5.0 [1.6, 11.6]
SIDIAP	Suicide ideation	2018	48	113,388.8	42.3 [31.2, 56.1]
SIDIAP	Suicide ideation	2019	62	126,301.8	49.1 [37.6, 62.9]
SIDIAP	Suicide ideation	2020	44	138,404.2	31.8 [23.1, 42.7]
SIDIAP	Suicide ideation	2021	97	151,737.6	63.9 [51.8, 78.0]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
SIDIAP	Suicide ideation	2022	107	166,043.8	64.4 [52.8, 77.9]
SIDIAP	Suicide ideation	2023	70	86,902.8	80.6 [62.8, 101.8]
VID	Suicide ideation	2019	13	14,643.0	88.8 [47.3, 151.8]
VID	Suicide ideation	2020	30	33,559.1	89.4 [60.3, 127.6]
VID	Suicide ideation	2021	67	50,225.0	133.4 [103.4, 169.4]

Appendix II. Table S 10. Incidence rates of intentional self-harm outcome in the acne population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Intentional self-harm	2010	60	32,101.9	186.9 [142.6, 240.6]
CPRD Gold	Intentional self-harm	2011	132	75,251.9	175.4 [146.8, 208.0]
CPRD Gold	Intentional self-harm	2012	170	108,070.5	157.3 [134.5, 182.8]
CPRD Gold	Intentional self-harm	2013	244	129,878.7	187.9 [165.0, 213.0]
CPRD Gold	Intentional self-harm	2014	249	141,107.0	176.5 [155.2, 199.8]
CPRD Gold	Intentional self-harm	2015	222	139,682.4	158.9 [138.7, 181.3]
CPRD Gold	Intentional self-harm	2016	232	129,095.6	179.7 [157.3, 204.4]
CPRD Gold	Intentional self-harm	2017	202	125,038.3	161.6 [140.0, 185.4]
CPRD Gold	Intentional self-harm	2018	213	123,664.1	172.2 [149.9, 197.0]
CPRD Gold	Intentional self-harm	2019	194	122,976.1	157.8 [136.3, 181.6]
CPRD Gold	Intentional self-harm	2020	173	115,139.6	150.3 [128.7, 174.4]
CPRD Gold	Intentional self-harm	2021	140	103,117.1	135.8 [114.2, 160.2]
CPRD Gold	Intentional self-harm	2022	138	94,781.0	145.6 [122.3, 172.0]
CPRD Gold	Intentional self-harm	2023	112	90,742.4	123.4 [101.6, 148.5]
CPRD Gold	Intentional self-harm	2024	33	38,559.0	85.6 [58.9, 120.2]
IPCI	Intentional self-harm	2010	0	1,752.2	0.0 [0.0, 210.5]
IPCI	Intentional self-harm	2011	0	4,713.7	0.0 [0.0, 78.3]
IPCI	Intentional self-harm	2012	0	7,922.3	0.0 [0.0, 46.6]
IPCI	Intentional self-harm	2013	0	9,772.5	0.0 [0.0, 37.7]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
IPCI	Intentional self-harm	2014	0	12,226.1	0.0 [0.0, 30.2]
IPCI	Intentional self-harm	2015	0	14,375.7	0.0 [0.0, 25.7]
IPCI	Intentional self-harm	2016	0	17,693.9	0.0 [0.0, 20.8]
IPCI	Intentional self-harm	2017	0	21,513.4	0.0 [0.0, 17.1]
IPCI	Intentional self-harm	2018	0	24,675.8	0.0 [0.0, 14.9]
IPCI	Intentional self-harm	2019	0	27,959.9	0.0 [0.0, 13.2]
IPCI	Intentional self-harm	2020	0	30,543.4	0.0 [0.0, 12.1]
IPCI	Intentional self-harm	2021	0	32,361.4	0.0 [0.0, 11.4]
IPCI	Intentional self-harm	2022	0	30,490.3	0.0 [0.0, 12.1]
IPCI	Intentional self-harm	2023	0	29,284.1	0.0 [0.0, 12.6]
NAJS	Intentional self-harm	2017	34	63,559.4	53.5 [37.0, 74.8]
NAJS	Intentional self-harm	2018	46	88,966.7	51.7 [37.9, 69.0]
NAJS	Intentional self-harm	2019	55	110,427.9	49.8 [37.5, 64.8]
NAJS	Intentional self-harm	2020	48	128,715.8	37.3 [27.5, 49.4]
NAJS	Intentional self-harm	2021	63	144,870.8	43.5 [33.4, 55.6]
NAJS	Intentional self-harm	2022	74	161,359.9	45.9 [36.0, 57.6]
NAJS	Intentional self-harm	2023	53	177,102.6	29.9 [22.4, 39.1]
NAJS	Intentional self-harm	2024	21	82,460.2	25.5 [15.8, 38.9]
SIDIAP	Intentional self-harm	2010	supp	supp	supp
SIDIAP	Intentional self-harm	2011	supp	supp	supp
SIDIAP	Intentional self-harm	2012	supp	supp	supp
SIDIAP	Intentional self-harm	2013	15	44,451.3	33.7 [18.9, 55.7]
SIDIAP	Intentional self-harm	2014	15	59,862.5	25.1 [14.0, 41.3]
SIDIAP	Intentional self-harm	2015	12	74,197.6	16.2 [8.4, 28.3]
SIDIAP	Intentional self-harm	2016	13	87,765.7	14.8 [7.9, 25.3]
SIDIAP	Intentional self-harm	2017	18	100,501.5	17.9 [10.6, 28.3]
SIDIAP	Intentional self-harm	2018	33	113,322.3	29.1 [20.0, 40.9]
SIDIAP	Intentional self-harm	2019	32	126,257.3	25.3 [17.3, 35.8]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
SIDIAP	Intentional self-harm	2020	37	138,388.6	26.7 [18.8, 36.9]
SIDIAP	Intentional self-harm	2021	37	151,764.5	24.4 [17.2, 33.6]
SIDIAP	Intentional self-harm	2022	57	166,150.3	34.3 [26.0, 44.4]
SIDIAP	Intentional self-harm	2023	23	86,980.7	26.4 [16.8, 39.7]
VID	Intentional self-harm	2019	11	14,645.5	75.1 [37.5, 134.4]
VID	Intentional self-harm	2020	42	33,554.6	125.2 [90.2, 169.2]
VID	Intentional self-harm	2021	74	50,206.1	147.4 [115.7, 185.0]

Appendix II. Table S 11. Incidence rates of suicide-related events outcome in the acne population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Suicide-related events	2010	63	32,089.3	196.3 [150.9, 251.2]
CPRD Gold	Suicide-related events	2011	151	75,206.1	200.8 [170.0, 235.5]
CPRD Gold	Suicide-related events	2012	234	107,966.7	216.7 [189.9, 246.4]
CPRD Gold	Suicide-related events	2013	340	129,674.7	262.2 [235.1, 291.6]
CPRD Gold	Suicide-related events	2014	373	140,796.9	264.9 [238.7, 293.2]
CPRD Gold	Suicide-related events	2015	336	139,300.3	241.2 [216.1, 268.4]
CPRD Gold	Suicide-related events	2016	323	128,688.3	251.0 [224.4, 279.9]
CPRD Gold	Suicide-related events	2017	349	124,516.4	280.3 [251.6, 311.3]
CPRD Gold	Suicide-related events	2018	389	123,052.5	316.1 [285.5, 349.2]
CPRD Gold	Suicide-related events	2019	387	122,181.6	316.7 [286.0, 349.9]
CPRD Gold	Suicide-related events	2020	376	114,249.2	329.1 [296.7, 364.1]
CPRD Gold	Suicide-related events	2021	288	102,172.4	281.9 [250.3, 316.4]
CPRD Gold	Suicide-related events	2022	280	93,793.7	298.5 [264.6, 335.6]
CPRD Gold	Suicide-related events	2023	269	89,642.8	300.1 [265.3, 338.2]
CPRD Gold	Suicide-related events	2024	89	38,074.4	233.8 [187.7, 287.7]
IPCI	Suicide-related events	2010	supp	supp	supp
IPCI	Suicide-related events	2011	supp	supp	supp

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
IPCI	Suicide-related events	2012	10	7,906.2	126.5 [60.7, 232.6]
IPCI	Suicide-related events	2013	6	9,746.3	61.6 [22.6, 134.0]
IPCI	Suicide-related events	2014	15	12,185.8	123.1 [68.9, 203.0]
IPCI	Suicide-related events	2015	9	14,332.0	62.8 [28.7, 119.2]
IPCI	Suicide-related events	2016	13	17,637.8	73.7 [39.2, 126.0]
IPCI	Suicide-related events	2017	12	21,436.5	56.0 [28.9, 97.8]
IPCI	Suicide-related events	2018	18	24,587.4	73.2 [43.4, 115.7]
IPCI	Suicide-related events	2019	24	27,854.9	86.2 [55.2, 128.2]
IPCI	Suicide-related events	2020	25	30,417.2	82.2 [53.2, 121.3]
IPCI	Suicide-related events	2021	28	32,208.2	86.9 [57.8, 125.6]
IPCI	Suicide-related events	2022	32	30,326.5	105.5 [72.2, 149.0]
IPCI	Suicide-related events	2023	24	29,114.6	82.4 [52.8, 122.7]
NAJS	Suicide-related events	2017	45	63,542.0	70.8 [51.7, 94.8]
NAJS	Suicide-related events	2018	54	88,930.5	60.7 [45.6, 79.2]
NAJS	Suicide-related events	2019	77	110,368.5	69.8 [55.1, 87.2]
NAJS	Suicide-related events	2020	68	128,621.1	52.9 [41.1, 67.0]
NAJS	Suicide-related events	2021	74	144,751.0	51.1 [40.1, 64.2]
NAJS	Suicide-related events	2022	98	161,222.1	60.8 [49.3, 74.1]
NAJS	Suicide-related events	2023	77	176,934.1	43.5 [34.3, 54.4]
NAJS	Suicide-related events	2024	22	82,378.0	26.7 [16.7, 40.4]
SIDIAP	Suicide-related events	2010	0	6,569.2	0.0 [0.0, 56.2]
SIDIAP	Suicide-related events	2011	supp	supp	supp
SIDIAP	Suicide-related events	2012	9	30,375.4	29.6 [13.5, 56.2]
SIDIAP	Suicide-related events	2013	14	44,446.2	31.5 [17.2, 52.8]
SIDIAP	Suicide-related events	2014	37	59,844.9	61.8 [43.5, 85.2]
SIDIAP	Suicide-related events	2015	36	74,147.6	48.6 [34.0, 67.2]
SIDIAP	Suicide-related events	2016	32	87,684.5	36.5 [25.0, 51.5]
SIDIAP	Suicide-related events	2017	40	100,384.4	39.8 [28.5, 54.3]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
SIDIAP	Suicide-related events	2018	95	113,142.7	84.0 [67.9, 102.6]
SIDIAP	Suicide-related events	2019	117	125,986.4	92.9 [76.8, 111.3]
SIDIAP	Suicide-related events	2020	135	137,993.4	97.8 [82.0, 115.8]
SIDIAP	Suicide-related events	2021	196	151,208.4	129.6 [112.1, 149.1]
SIDIAP	Suicide-related events	2022	246	165,369.7	148.8 [130.7, 168.6]
SIDIAP	Suicide-related events	2023	144	86,504.9	166.5 [140.4, 196.0]
VID	Suicide-related events	2019	20	14,639.3	136.6 [83.5, 211.0]
VID	Suicide-related events	2020	77	33,516.3	229.7 [181.3, 287.1]
VID	Suicide-related events	2021	158	50,081.6	315.5 [268.2, 368.7]

Appendix II. Table S 12. Incidence rates of composite suicide outcome in the acne population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Composite suicide	2010	91	32,074.1	283.7 [228.4, 348.3]
CPRD Gold	Composite suicide	2011	213	75,115.3	283.6 [246.8, 324.3]
CPRD Gold	Composite suicide	2012	307	107,772.4	284.9 [253.9, 318.6]
CPRD Gold	Composite suicide	2013	445	129,369.9	344.0 [312.8, 377.5]
CPRD Gold	Composite suicide	2014	452	140,388.1	322.0 [293.0, 353.1]
CPRD Gold	Composite suicide	2015	413	138,824.3	297.5 [269.5, 327.6]
CPRD Gold	Composite suicide	2016	400	128,192.0	312.0 [282.2, 344.2]
CPRD Gold	Composite suicide	2017	405	124,012.4	326.6 [295.5, 360.0]
CPRD Gold	Composite suicide	2018	439	122,535.7	358.3 [325.5, 393.4]
CPRD Gold	Composite suicide	2019	436	121,641.2	358.4 [325.6, 393.7]
CPRD Gold	Composite suicide	2020	413	113,701.9	363.2 [329.0, 400.0]
CPRD Gold	Composite suicide	2021	320	101,647.6	314.8 [281.3, 351.3]
CPRD Gold	Composite suicide	2022	320	93,285.5	343.0 [306.5, 382.8]
CPRD Gold	Composite suicide	2023	298	89,142.7	334.3 [297.4, 374.5]
CPRD Gold	Composite suicide	2024	98	37,856.4	258.9 [210.2, 315.5]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
IPCI	Composite suicide	2010	supp	supp	supp
IPCI	Composite suicide	2011	supp	supp	supp
IPCI	Composite suicide	2012	10	7,906.2	126.5 [60.7, 232.6]
IPCI	Composite suicide	2013	6	9,746.3	61.6 [22.6, 134.0]
IPCI	Composite suicide	2014	15	12,185.8	123.1 [68.9, 203.0]
IPCI	Composite suicide	2015	9	14,332.0	62.8 [28.7, 119.2]
IPCI	Composite suicide	2016	13	17,637.8	73.7 [39.2, 126.0]
IPCI	Composite suicide	2017	12	21,436.5	56.0 [28.9, 97.8]
IPCI	Composite suicide	2018	18	24,587.4	73.2 [43.4, 115.7]
IPCI	Composite suicide	2019	24	27,854.9	86.2 [55.2, 128.2]
IPCI	Composite suicide	2020	25	30,417.2	82.2 [53.2, 121.3]
IPCI	Composite suicide	2021	28	32,208.2	86.9 [57.8, 125.6]
IPCI	Composite suicide	2022	32	30,326.5	105.5 [72.2, 149.0]
IPCI	Composite suicide	2023	24	29,114.6	82.4 [52.8, 122.7]
NAJS	Composite suicide	2017	49	63,538.1	77.1 [57.1, 102.0]
NAJS	Composite suicide	2018	59	88,919.7	66.4 [50.5, 85.6]
NAJS	Composite suicide	2019	81	110,350.6	73.4 [58.3, 91.2]
NAJS	Composite suicide	2020	73	128,594.1	56.8 [44.5, 71.4]
NAJS	Composite suicide	2021	86	144,712.5	59.4 [47.5, 73.4]
NAJS	Composite suicide	2022	103	161,165.9	63.9 [52.2, 77.5]
NAJS	Composite suicide	2023	83	176,863.1	46.9 [37.4, 58.2]
NAJS	Composite suicide	2024	28	82,339.7	34.0 [22.6, 49.1]
SIDIAP	Composite suicide	2010	supp	supp	supp
SIDIAP	Composite suicide	2011	6	18,717.1	32.1 [11.8, 69.8]
SIDIAP	Composite suicide	2012	11	30,370.0	36.2 [18.1, 64.8]
SIDIAP	Composite suicide	2013	28	44,427.7	63.0 [41.9, 91.1]
SIDIAP	Composite suicide	2014	49	59,809.2	81.9 [60.6, 108.3]
SIDIAP	Composite suicide	2015	46	74,096.8	62.1 [45.5, 82.8]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
SIDIAP	Composite suicide	2016	44	87,614.9	50.2 [36.5, 67.4]
SIDIAP	Composite suicide	2017	56	100,296.8	55.8 [42.2, 72.5]
SIDIAP	Composite suicide	2018	101	113,038.6	89.3 [72.8, 108.6]
SIDIAP	Composite suicide	2019	123	125,875.8	97.7 [81.2, 116.6]
SIDIAP	Composite suicide	2020	135	137,884.3	97.9 [82.1, 115.9]
SIDIAP	Composite suicide	2021	196	151,096.1	129.7 [112.2, 149.2]
SIDIAP	Composite suicide	2022	244	165,258.7	147.6 [129.7, 167.4]
SIDIAP	Composite suicide	2023	140	86,451.6	161.9 [136.2, 191.1]
VID	Composite suicide	2019	21	14,637.7	143.5 [88.8, 219.3]
VID	Composite suicide	2020	87	33,504.7	259.7 [208.0, 320.3]
VID	Composite suicide	2021	169	50,049.1	337.7 [288.7, 392.6]

Appendix II. Table S 13. Incidence rates of completed suicide outcome in the psoriasis population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Completed suicide	2010	0	14,362.6	0.0 [0.0, 25.7]
CPRD Gold	Completed suicide	2011	0	34,991.7	0.0 [0.0, 10.5]
CPRD Gold	Completed suicide	2012	0	50,766.5	0.0 [0.0, 7.3]
CPRD Gold	Completed suicide	2013	supp	supp	supp
CPRD Gold	Completed suicide	2014	0	66,346.0	0.0 [0.0, 5.6]
CPRD Gold	Completed suicide	2015	supp	supp	supp
CPRD Gold	Completed suicide	2016	0	62,675.4	0.0 [0.0, 5.9]
CPRD Gold	Completed suicide	2017	0	61,146.1	0.0 [0.0, 6.0]
CPRD Gold	Completed suicide	2018	0	61,659.8	0.0 [0.0, 6.0]
CPRD Gold	Completed suicide	2019	0	62,261.3	0.0 [0.0, 5.9]
CPRD Gold	Completed suicide	2020	0	59,451.0	0.0 [0.0, 6.2]
CPRD Gold	Completed suicide	2021	supp	supp	supp
CPRD Gold	Completed suicide	2022	supp	supp	supp

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Completed suicide	2023	0	51,124.7	0.0 [0.0, 7.2]
CPRD Gold	Completed suicide	2024	0	22,084.0	0.0 [0.0, 16.7]
IPCI	Completed suicide	2010	0	1,211.1	0.0 [0.0, 304.6]
IPCI	Completed suicide	2011	0	3,102.1	0.0 [0.0, 118.9]
IPCI	Completed suicide	2012	supp	supp	supp
IPCI	Completed suicide	2013	0	5,767.5	0.0 [0.0, 64.0]
IPCI	Completed suicide	2014	0	6,876.3	0.0 [0.0, 53.6]
IPCI	Completed suicide	2015	0	8,286.8	0.0 [0.0, 44.5]
IPCI	Completed suicide	2016	supp	supp	supp
IPCI	Completed suicide	2017	supp	supp	supp
IPCI	Completed suicide	2018	supp	supp	supp
IPCI	Completed suicide	2019	0	15,811.6	0.0 [0.0, 23.3]
IPCI	Completed suicide	2020	0	17,136.1	0.0 [0.0, 21.5]
IPCI	Completed suicide	2021	supp	supp	supp
IPCI	Completed suicide	2022	supp	supp	supp
IPCI	Completed suicide	2023	supp	supp	supp
IPCI	Completed suicide	2024			
NAJS	Completed suicide	2017	0	41,146.3	0.0 [0.0, 9.0]
NAJS	Completed suicide	2018	0	51,442.7	0.0 [0.0, 7.2]
NAJS	Completed suicide	2019	0	59,175.3	0.0 [0.0, 6.2]
NAJS	Completed suicide	2020	0	65,248.4	0.0 [0.0, 5.7]
NAJS	Completed suicide	2021	0	69,678.7	0.0 [0.0, 5.3]
NAJS	Completed suicide	2022	0	74,572.8	0.0 [0.0, 4.9]
NAJS	Completed suicide	2023	0	79,840.6	0.0 [0.0, 4.6]
NAJS	Completed suicide	2024	0	36,329.2	0.0 [0.0, 10.2]
SIDIAP	Completed suicide	2010	0	5,614.5	0.0 [0.0, 65.7]
SIDIAP	Completed suicide	2011	0	15,413.4	0.0 [0.0, 23.9]
SIDIAP	Completed suicide	2012	0	24,180.6	0.0 [0.0, 15.3]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
SIDIAP	Completed suicide	2013	0	33,070.2	0.0 [0.0, 11.2]
SIDIAP	Completed suicide	2014	0	42,249.8	0.0 [0.0, 8.7]
SIDIAP	Completed suicide	2015	0	50,790.5	0.0 [0.0, 7.3]
SIDIAP	Completed suicide	2016	0	59,049.7	0.0 [0.0, 6.2]
SIDIAP	Completed suicide	2017	0	66,402.9	0.0 [0.0, 5.6]
SIDIAP	Completed suicide	2018	0	73,500.1	0.0 [0.0, 5.0]
SIDIAP	Completed suicide	2019	0	80,564.5	0.0 [0.0, 4.6]
SIDIAP	Completed suicide	2020	0	86,693.2	0.0 [0.0, 4.3]
SIDIAP	Completed suicide	2021	0	91,581.0	0.0 [0.0, 4.0]
SIDIAP	Completed suicide	2022	0	98,289.4	0.0 [0.0, 3.8]
SIDIAP	Completed suicide	2023	0	51,504.0	0.0 [0.0, 7.2]
VID	Completed suicide	2019	0	6,207.8	0.0 [0.0, 59.4]
VID	Completed suicide	2020	0	13,174.7	0.0 [0.0, 28.0]
VID	Completed suicide	2021	0	17,778.0	0.0 [0.0, 20.7]

Appendix II. Table S 14. Incidence rates of the suicide attempt outcome in the psoriasis population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Suicide attempt	2010	7	14,354.6	48.8 [19.6, 100.5]
CPRD Gold	Suicide attempt	2011	27	34,953.1	77.2 [50.9, 112.4]
CPRD Gold	Suicide attempt	2012	36	50,675.0	71.0 [49.8, 98.4]
CPRD Gold	Suicide attempt	2013	42	61,182.4	68.6 [49.5, 92.8]
CPRD Gold	Suicide attempt	2014	33	66,151.5	49.9 [34.3, 70.1]
CPRD Gold	Suicide attempt	2015	40	66,473.3	60.2 [43.0, 81.9]
CPRD Gold	Suicide attempt	2016	35	62,407.3	56.1 [39.1, 78.0]
CPRD Gold	Suicide attempt	2017	39	60,863.5	64.1 [45.6, 87.6]
CPRD Gold	Suicide attempt	2018	40	61,350.6	65.2 [46.6, 88.8]
CPRD Gold	Suicide attempt	2019	38	61,908.4	61.4 [43.4, 84.3]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Suicide attempt	2020	40	59,088.3	67.7 [48.4, 92.2]
CPRD Gold	Suicide attempt	2021	31	54,260.2	57.1 [38.8, 81.1]
CPRD Gold	Suicide attempt	2022	35	51,567.0	67.9 [47.3, 94.4]
CPRD Gold	Suicide attempt	2023	24	50,748.8	47.3 [30.3, 70.4]
CPRD Gold	Suicide attempt	2024	8	21,920.9	36.5 [15.8, 71.9]
IPCI	Suicide attempt	2010	supp	supp	supp
IPCI	Suicide attempt	2011	supp	supp	supp
IPCI	Suicide attempt	2012	supp	supp	supp
IPCI	Suicide attempt	2013	6	5,754.9	104.3 [38.3, 226.9]
IPCI	Suicide attempt	2014	supp	supp	supp
IPCI	Suicide attempt	2015	7	8,270.1	84.6 [34.0, 174.4]
IPCI	Suicide attempt	2016	supp	supp	supp
IPCI	Suicide attempt	2017	6	12,483.9	48.1 [17.6, 104.6]
IPCI	Suicide attempt	2018	7	14,198.4	49.3 [19.8, 101.6]
IPCI	Suicide attempt	2019	8	15,768.8	50.7 [21.9, 100.0]
IPCI	Suicide attempt	2020	8	17,086.3	46.8 [20.2, 92.3]
IPCI	Suicide attempt	2021	6	17,712.5	33.9 [12.4, 73.7]
IPCI	Suicide attempt	2022	supp	supp	supp
IPCI	Suicide attempt	2023	5	15,736.6	31.8 [10.3, 74.1]
NAJS	Suicide attempt	2017	18	41,108.0	43.8 [26.0, 69.2]
NAJS	Suicide attempt	2018	36	51,368.7	70.1 [49.1, 97.0]
NAJS	Suicide attempt	2019	28	59,063.0	47.4 [31.5, 68.5]
NAJS	Suicide attempt	2020	21	65,110.7	32.3 [20.0, 49.3]
NAJS	Suicide attempt	2021	29	69,514.0	41.7 [27.9, 59.9]
NAJS	Suicide attempt	2022	36	74,362.2	48.4 [33.9, 67.0]
NAJS	Suicide attempt	2023	25	79,591.0	31.4 [20.3, 46.4]
NAJS	Suicide attempt	2024	supp	supp	supp
SIDIAP	Suicide attempt	2010	supp	supp	supp

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
SIDIAP	Suicide attempt	2011	supp	supp	supp
SIDIAP	Suicide attempt	2012	supp	supp	supp
SIDIAP	Suicide attempt	2013	8	33,044.3	24.2 [10.5, 47.7]
SIDIAP	Suicide attempt	2014	15	42,205.0	35.5 [19.9, 58.6]
SIDIAP	Suicide attempt	2015	15	50,721.4	29.6 [16.6, 48.8]
SIDIAP	Suicide attempt	2016	13	58,958.2	22.0 [11.7, 37.7]
SIDIAP	Suicide attempt	2017	22	66,283.0	33.2 [20.8, 50.3]
SIDIAP	Suicide attempt	2018	32	73,336.5	43.6 [29.8, 61.6]
SIDIAP	Suicide attempt	2019	45	80,340.9	56.0 [40.9, 74.9]
SIDIAP	Suicide attempt	2020	39	86,407.8	45.1 [32.1, 61.7]
SIDIAP	Suicide attempt	2021	47	91,228.9	51.5 [37.9, 68.5]
SIDIAP	Suicide attempt	2022	61	97,855.2	62.3 [47.7, 80.1]
SIDIAP	Suicide attempt	2023	33	51,259.2	64.4 [44.3, 90.4]
VID	Suicide attempt	2019	supp	supp	supp
VID	Suicide attempt	2020	16	13,161.7	121.6 [69.5, 197.4]
VID	Suicide attempt	2021	35	17,734.1	197.4 [137.5, 274.5]

Appendix II. Table S 15. Incidence rates of suicide ideation outcome in the psoriasis population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Suicide ideation	2010	17	14,350.2	118.5 [69.0, 189.7]
CPRD Gold	Suicide ideation	2011	47	34,924.0	134.6 [98.9, 179.0]
CPRD Gold	Suicide ideation	2012	59	50,619.3	116.6 [88.7, 150.3]
CPRD Gold	Suicide ideation	2013	83	61,105.8	135.8 [108.2, 168.4]
CPRD Gold	Suicide ideation	2014	84	66,029.0	127.2 [101.5, 157.5]
CPRD Gold	Suicide ideation	2015	63	66,313.3	95.0 [73.0, 121.6]
CPRD Gold	Suicide ideation	2016	82	62,237.7	131.8 [104.8, 163.5]
CPRD Gold	Suicide ideation	2017	82	60,658.3	135.2 [107.5, 167.8]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Suicide ideation	2018	88	61,107.0	144.0 [115.5, 177.4]
CPRD Gold	Suicide ideation	2019	117	61,609.5	189.9 [157.1, 227.6]
CPRD Gold	Suicide ideation	2020	99	58,715.9	168.6 [137.0, 205.3]
CPRD Gold	Suicide ideation	2021	89	53,849.6	165.3 [132.7, 203.4]
CPRD Gold	Suicide ideation	2022	84	51,122.9	164.3 [131.1, 203.4]
CPRD Gold	Suicide ideation	2023	87	50,257.7	173.1 [138.7, 213.5]
CPRD Gold	Suicide ideation	2024	34	21,693.1	156.7 [108.5, 219.0]
IPCI	Suicide ideation	2010	0	1,211.1	0.0 [0.0, 304.6]
IPCI	Suicide ideation	2011	0	3,102.1	0.0 [0.0, 118.9]
IPCI	Suicide ideation	2012	0	4,986.7	0.0 [0.0, 74.0]
IPCI	Suicide ideation	2013	0	5,767.5	0.0 [0.0, 64.0]
IPCI	Suicide ideation	2014	0	6,876.3	0.0 [0.0, 53.6]
IPCI	Suicide ideation	2015	0	8,286.8	0.0 [0.0, 44.5]
IPCI	Suicide ideation	2016	0	10,400.7	0.0 [0.0, 35.5]
IPCI	Suicide ideation	2017	0	12,509.2	0.0 [0.0, 29.5]
IPCI	Suicide ideation	2018	0	14,232.6	0.0 [0.0, 25.9]
IPCI	Suicide ideation	2019	0	15,812.6	0.0 [0.0, 23.3]
IPCI	Suicide ideation	2020	0	17,136.1	0.0 [0.0, 21.5]
IPCI	Suicide ideation	2021	0	17,769.4	0.0 [0.0, 20.8]
IPCI	Suicide ideation	2022	0	16,224.6	0.0 [0.0, 22.7]
IPCI	Suicide ideation	2023	0	15,792.7	0.0 [0.0, 23.4]
NAJS	Suicide ideation	2017	0	41,146.3	0.0 [0.0, 9.0]
NAJS	Suicide ideation	2018	0	51,442.7	0.0 [0.0, 7.2]
NAJS	Suicide ideation	2019	0	59,175.3	0.0 [0.0, 6.2]
NAJS	Suicide ideation	2020	0	65,248.4	0.0 [0.0, 5.7]
NAJS	Suicide ideation	2021	0	69,678.7	0.0 [0.0, 5.3]
NAJS	Suicide ideation	2022	0	74,572.8	0.0 [0.0, 4.9]
NAJS	Suicide ideation	2023	0	79,840.6	0.0 [0.0, 4.6]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
NAJS	Suicide ideation	2024	0	36,329.2	0.0 [0.0, 10.2]
SIDIAP	Suicide ideation	2010	0	5,614.5	0.0 [0.0, 65.7]
SIDIAP	Suicide ideation	2011	0	15,413.4	0.0 [0.0, 23.9]
SIDIAP	Suicide ideation	2012	supp	supp	supp
SIDIAP	Suicide ideation	2013	0	33,064.8	0.0 [0.0, 11.2]
SIDIAP	Suicide ideation	2014	supp	supp	supp
SIDIAP	Suicide ideation	2015	supp	supp	supp
SIDIAP	Suicide ideation	2016	supp	supp	supp
SIDIAP	Suicide ideation	2017	7	66,383.1	10.5 [4.2, 21.7]
SIDIAP	Suicide ideation	2018	23	73,459.3	31.3 [19.8, 47.0]
SIDIAP	Suicide ideation	2019	22	80,501.1	27.3 [17.1, 41.4]
SIDIAP	Suicide ideation	2020	22	86,603.5	25.4 [15.9, 38.5]
SIDIAP	Suicide ideation	2021	32	91,458.6	35.0 [23.9, 49.4]
SIDIAP	Suicide ideation	2022	51	98,121.3	52.0 [38.7, 68.3]
SIDIAP	Suicide ideation	2023	34	51,393.8	66.2 [45.8, 92.4]
VID	Suicide ideation	2019	8	6,204.0	128.9 [55.7, 254.1]
VID	Suicide ideation	2020	supp	supp	supp
VID	Suicide ideation	2021	22	17,739.0	124.0 [77.7, 187.8]

Appendix II. Table S 16. Incidence rates of intentional self-harm outcome in the psoriasis population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Intentional self-harm	2010	11	14,350.7	76.7 [38.3, 137.2]
CPRD Gold	Intentional self-harm	2011	36	34,937.7	103.0 [72.2, 142.7]
CPRD Gold	Intentional self-harm	2012	55	50,633.8	108.6 [81.8, 141.4]
CPRD Gold	Intentional self-harm	2013	60	61,117.3	98.2 [74.9, 126.4]
CPRD Gold	Intentional self-harm	2014	56	66,055.2	84.8 [64.0, 110.1]
CPRD Gold	Intentional self-harm	2015	52	66,357.0	78.4 [58.5, 102.8]
CPRD Gold	Intentional self-harm	2016	56	62,294.3	89.9 [67.9, 116.7]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Intentional self-harm	2017	48	60,756.3	79.0 [58.3, 104.7]
CPRD Gold	Intentional self-harm	2018	63	61,238.6	102.9 [79.1, 131.6]
CPRD Gold	Intentional self-harm	2019	76	61,760.8	123.1 [97.0, 154.0]
CPRD Gold	Intentional self-harm	2020	58	58,909.2	98.5 [74.8, 127.3]
CPRD Gold	Intentional self-harm	2021	48	54,078.9	88.8 [65.4, 117.7]
CPRD Gold	Intentional self-harm	2022	39	51,377.9	75.9 [54.0, 103.8]
CPRD Gold	Intentional self-harm	2023	26	50,564.3	51.4 [33.6, 75.3]
CPRD Gold	Intentional self-harm	2024	11	21,841.5	50.4 [25.1, 90.1]
IPCI	Intentional self-harm	2010	0	1,211.1	0.0 [0.0, 304.6]
IPCI	Intentional self-harm	2011	0	3,102.1	0.0 [0.0, 118.9]
IPCI	Intentional self-harm	2012	0	4,986.7	0.0 [0.0, 74.0]
IPCI	Intentional self-harm	2013	0	5,767.5	0.0 [0.0, 64.0]
IPCI	Intentional self-harm	2014	0	6,876.3	0.0 [0.0, 53.6]
IPCI	Intentional self-harm	2015	0	8,286.8	0.0 [0.0, 44.5]
IPCI	Intentional self-harm	2016	0	10,400.7	0.0 [0.0, 35.5]
IPCI	Intentional self-harm	2017	0	12,509.2	0.0 [0.0, 29.5]
IPCI	Intentional self-harm	2018	0	14,232.6	0.0 [0.0, 25.9]
IPCI	Intentional self-harm	2019	0	15,812.6	0.0 [0.0, 23.3]
IPCI	Intentional self-harm	2020	0	17,136.1	0.0 [0.0, 21.5]
IPCI	Intentional self-harm	2021	0	17,769.4	0.0 [0.0, 20.8]
IPCI	Intentional self-harm	2022	0	16,224.6	0.0 [0.0, 22.7]
IPCI	Intentional self-harm	2023	0	15,792.7	0.0 [0.0, 23.4]
NAJS	Intentional self-harm	2017	14	41,120.5	34.0 [18.6, 57.1]
NAJS	Intentional self-harm	2018	23	51,390.6	44.8 [28.4, 67.2]
NAJS	Intentional self-harm	2019	13	59,098.4	22.0 [11.7, 37.6]
NAJS	Intentional self-harm	2020	17	65,154.9	26.1 [15.2, 41.8]
NAJS	Intentional self-harm	2021	24	69,563.9	34.5 [22.1, 51.3]
NAJS	Intentional self-harm	2022	29	74,423.3	39.0 [26.1, 56.0]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
NAJS	Intentional self-harm	2023	19	79,657.8	23.9 [14.4, 37.2]
NAJS	Intentional self-harm	2024	supp	supp	supp
SIDIAP	Intentional self-harm	2010	supp	supp	supp
SIDIAP	Intentional self-harm	2011	supp	supp	supp
SIDIAP	Intentional self-harm	2012	5	24,168.0	20.7 [6.7, 48.3]
SIDIAP	Intentional self-harm	2013	6	33,051.7	18.2 [6.7, 39.5]
SIDIAP	Intentional self-harm	2014	10	42,224.5	23.7 [11.4, 43.6]
SIDIAP	Intentional self-harm	2015	11	50,754.5	21.7 [10.8, 38.8]
SIDIAP	Intentional self-harm	2016	9	59,001.8	15.3 [7.0, 29.0]
SIDIAP	Intentional self-harm	2017	9	66,342.3	13.6 [6.2, 25.8]
SIDIAP	Intentional self-harm	2018	18	73,421.4	24.5 [14.5, 38.7]
SIDIAP	Intentional self-harm	2019	13	80,468.3	16.2 [8.6, 27.6]
SIDIAP	Intentional self-harm	2020	19	86,581.7	21.9 [13.2, 34.3]
SIDIAP	Intentional self-harm	2021	12	91,451.1	13.1 [6.8, 22.9]
SIDIAP	Intentional self-harm	2022	14	98,143.6	14.3 [7.8, 23.9]
SIDIAP	Intentional self-harm	2023	11	51,424.4	21.4 [10.7, 38.3]
VID	Intentional self-harm	2019	supp	supp	supp
VID	Intentional self-harm	2020	10	13,161.4	76.0 [36.4, 139.7]
VID	Intentional self-harm	2021	18	17,744.1	101.4 [60.1, 160.3]

Appendix II. Table S 17. Incidence rates of suicide-related events outcome in the psoriasis population by year and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Suicide-related events	2010	23	14,343.0	160.4 [101.7, 240.6]
CPRD Gold	Suicide-related events	2011	69	34,889.7	197.8 [153.9, 250.3]
CPRD Gold	Suicide-related events	2012	89	50,537.7	176.1 [141.4, 216.7]
CPRD Gold	Suicide-related events	2013	116	60,971.0	190.3 [157.2, 228.2]
CPRD Gold	Suicide-related events	2014	110	65,859.5	167.0 [137.3, 201.3]
CPRD Gold	Suicide-related events	2015	94	66,117.4	142.2 [114.9, 174.0]
CPRD Gold	Suicide-related events	2016	105	62,013.3	169.3 [138.5, 205.0]
CPRD Gold	Suicide-related events	2017	111	60,425.2	183.7 [151.1, 221.2]
CPRD Gold	Suicide-related events	2018	113	60,856.0	185.7 [153.0, 223.2]
CPRD Gold	Suicide-related events	2019	144	61,331.2	234.8 [198.0, 276.4]
CPRD Gold	Suicide-related events	2020	125	58,437.2	213.9 [178.1, 254.9]
CPRD Gold	Suicide-related events	2021	107	53,579.7	199.7 [163.7, 241.3]
CPRD Gold	Suicide-related events	2022	108	50,853.5	212.4 [174.2, 256.4]
CPRD Gold	Suicide-related events	2023	100	49,989.1	200.0 [162.8, 243.3]
CPRD Gold	Suicide-related events	2024	36	21,579.3	166.8 [116.8, 231.0]
IPCI	Suicide-related events	2010	supp	supp	supp
IPCI	Suicide-related events	2011	supp	supp	supp
IPCI	Suicide-related events	2012	supp	supp	supp
IPCI	Suicide-related events	2013	6	5,754.9	104.3 [38.3, 226.9]
IPCI	Suicide-related events	2014	supp	supp	supp
IPCI	Suicide-related events	2015	7	8,270.1	84.6 [34.0, 174.4]
IPCI	Suicide-related events	2016	supp	supp	supp
IPCI	Suicide-related events	2017	7	12,483.8	56.1 [22.5, 115.5]
IPCI	Suicide-related events	2018	10	14,197.7	70.4 [33.8, 129.5]
IPCI	Suicide-related events	2019	8	15,767.8	50.7 [21.9, 100.0]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
IPCI	Suicide-related events	2020	8	17,086.3	46.8 [20.2, 92.3]
IPCI	Suicide-related events	2021	8	17,711.0	45.2 [19.5, 89.0]
IPCI	Suicide-related events	2022	5	16,164.9	30.9 [10.0, 72.2]
IPCI	Suicide-related events	2023	6	15,734.7	38.1 [14.0, 83.0]
NAJS	Suicide-related events	2017	18	41,108.0	43.8 [26.0, 69.2]
NAJS	Suicide-related events	2018	36	51,368.7	70.1 [49.1, 97.0]
NAJS	Suicide-related events	2019	28	59,063.0	47.4 [31.5, 68.5]
NAJS	Suicide-related events	2020	21	65,110.7	32.3 [20.0, 49.3]
NAJS	Suicide-related events	2021	29	69,514.0	41.7 [27.9, 59.9]
NAJS	Suicide-related events	2022	36	74,362.2	48.4 [33.9, 67.0]
NAJS	Suicide-related events	2023	25	79,591.0	31.4 [20.3, 46.4]
NAJS	Suicide-related events	2024	supp	supp	supp
SIDIAP	Suicide-related events	2010	supp	supp	supp
SIDIAP	Suicide-related events	2011	supp	supp	supp
SIDIAP	Suicide-related events	2012	5	24,163.6	20.7 [6.7, 48.3]
SIDIAP	Suicide-related events	2013	8	33,040.0	24.2 [10.5, 47.7]
SIDIAP	Suicide-related events	2014	19	42,198.3	45.0 [27.1, 70.3]
SIDIAP	Suicide-related events	2015	18	50,710.4	35.5 [21.0, 56.1]
SIDIAP	Suicide-related events	2016	15	58,943.7	25.4 [14.2, 42.0]
SIDIAP	Suicide-related events	2017	28	66,265.5	42.3 [28.1, 61.1]
SIDIAP	Suicide-related events	2018	48	73,304.0	65.5 [48.3, 86.8]
SIDIAP	Suicide-related events	2019	64	80,289.4	79.7 [61.4, 101.8]
SIDIAP	Suicide-related events	2020	56	86,335.9	64.9 [49.0, 84.2]
SIDIAP	Suicide-related events	2021	70	91,133.3	76.8 [59.9, 97.0]
SIDIAP	Suicide-related events	2022	97	97,726.4	99.3 [80.5, 121.1]
SIDIAP	Suicide-related events	2023	59	51,175.5	115.3 [87.8, 148.7]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
VID	Suicide-related events	2019	10	6,202.0	161.2 [77.3, 296.5]
VID	Suicide-related events	2020	18	13,144.6	136.9 [81.2, 216.4]
VID	Suicide-related events	2021	52	17,700.9	293.8 [219.4, 385.2]

Appendix II. Table S 18. Incidence rates of composite suicide outcome in the psoriasis population by year, and data source

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
CPRD Gold	Composite suicide	2010	28	14,339.1	195.3 [129.8, 282.2]
CPRD Gold	Composite suicide	2011	80	34,871.3	229.4 [181.9, 285.5]
CPRD Gold	Composite suicide	2012	106	50,492.4	209.9 [171.9, 253.9]
CPRD Gold	Composite suicide	2013	136	60,894.5	223.3 [187.4, 264.2]
CPRD Gold	Composite suicide	2014	126	65,757.6	191.6 [159.6, 228.1]
CPRD Gold	Composite suicide	2015	110	65,994.6	166.7 [137.0, 200.9]
CPRD Gold	Composite suicide	2016	127	61,886.8	205.2 [171.1, 244.2]
CPRD Gold	Composite suicide	2017	121	60,301.1	200.7 [166.5, 239.8]
CPRD Gold	Composite suicide	2018	127	60,725.5	209.1 [174.3, 248.8]
CPRD Gold	Composite suicide	2019	162	61,182.1	264.8 [225.6, 308.8]
CPRD Gold	Composite suicide	2020	138	58,272.9	236.8 [199.0, 279.8]
CPRD Gold	Composite suicide	2021	120	53,418.3	224.6 [186.3, 268.6]
CPRD Gold	Composite suicide	2022	114	50,691.1	224.9 [185.5, 270.2]
CPRD Gold	Composite suicide	2023	101	49,829.2	202.7 [165.1, 246.3]
CPRD Gold	Composite suicide	2024	38	21,511.9	176.6 [125.0, 242.5]
IPCI	Composite suicide	2010	supp	supp	supp
IPCI	Composite suicide	2011	supp	supp	supp
IPCI	Composite suicide	2012	supp	supp	supp
IPCI	Composite suicide	2013	6	5,754.9	104.3 [38.3, 226.9]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
IPCI	Composite suicide	2014	supp	supp	supp
IPCI	Composite suicide	2015	7	8,270.1	84.6 [34.0, 174.4]
IPCI	Composite suicide	2016	supp	supp	supp
IPCI	Composite suicide	2017	7	12,483.8	56.1 [22.5, 115.5]
IPCI	Composite suicide	2018	10	14,197.7	70.4 [33.8, 129.5]
IPCI	Composite suicide	2019	8	15,767.8	50.7 [21.9, 100.0]
IPCI	Composite suicide	2020	8	17,086.3	46.8 [20.2, 92.3]
IPCI	Composite suicide	2021	8	17,711.0	45.2 [19.5, 89.0]
IPCI	Composite suicide	2022	5	16,164.9	30.9 [10.0, 72.2]
IPCI	Composite suicide	2023	6	15,734.7	38.1 [14.0, 83.0]
NAJS	Composite suicide	2017	19	41,106.8	46.2 [27.8, 72.2]
NAJS	Composite suicide	2018	36	51,366.5	70.1 [49.1, 97.0]
NAJS	Composite suicide	2019	29	59,059.5	49.1 [32.9, 70.5]
NAJS	Composite suicide	2020	23	65,106.4	35.3 [22.4, 53.0]
NAJS	Composite suicide	2021	31	69,508.7	44.6 [30.3, 63.3]
NAJS	Composite suicide	2022	36	74,356.3	48.4 [33.9, 67.0]
NAJS	Composite suicide	2023	27	79,583.1	33.9 [22.4, 49.4]
NAJS	Composite suicide	2024	supp	supp	supp
SIDIAP	Composite suicide	2010	supp	supp	supp
SIDIAP	Composite suicide	2011	supp	supp	supp
SIDIAP	Composite suicide	2012	10	24,153.5	41.4 [19.9, 76.1]
SIDIAP	Composite suicide	2013	14	33,024.5	42.4 [23.2, 71.1]
SIDIAP	Composite suicide	2014	29	42,176.0	68.8 [46.0, 98.8]
SIDIAP	Composite suicide	2015	29	50,677.4	57.2 [38.3, 82.2]
SIDIAP	Composite suicide	2016	24	58,898.9	40.7 [26.1, 60.6]
SIDIAP	Composite suicide	2017	35	66,210.3	52.9 [36.8, 73.5]

Database name	Outcome of Interest	Year	Outcome count	Person years	Incidence rate [95% CI]
SIDIAP	Composite suicide	2018	53	73,239.6	72.4 [54.2, 94.7]
SIDIAP	Composite suicide	2019	63	80,224.0	78.5 [60.3, 100.5]
SIDIAP	Composite suicide	2020	56	86,273.6	64.9 [49.0, 84.3]
SIDIAP	Composite suicide	2021	71	91,068.8	78.0 [60.9, 98.3]
SIDIAP	Composite suicide	2022	95	97,657.2	97.3 [78.7, 118.9]
SIDIAP	Composite suicide	2023	57	51,140.9	111.5 [84.4, 144.4]
VID	Composite suicide	2019	13	6,201.0	209.6 [111.6, 358.5]
VID	Composite suicide	2020	17	13,140.7	129.4 [75.4, 207.1]
VID	Composite suicide	2021	53	17,696.7	299.5 [224.3, 391.7]