

Finasteride use and suicide attempts through self-poisoning: a case–control study

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Abstract

This study investigated the potential link between finasteride, commonly used for hair loss, and suicide attempts via self-poisoning. It was motivated by concerns over unanticipated psychological side-effects like suicidality identified in post-trial adverse event reports. We used data from multiple Danish health registries to assess male patients reported for suicidal intent poisoning. Each case was matched with 10 controls based on age, sex and residential municipality. We collected data on finasteride prescriptions up to 1 year before the index date, which was the date of the suicide attempt for cases and the inclusion date for controls. The study included 3366 cases and 33 660 controls. Adjustments were made for diagnosed bipolar disorder and schizophrenia, as well as occupational status. The analysis showed no link between finasteride use and suicide attempt risk, with an unadjusted odds ratio of 1.03 (95% confidence interval 0.56–1.88) and an adjusted odds ratio of 0.88 (95% confidence interval 0.45–1.71).

Finasteride, prescribed for androgenic alopecia and benign prostatic hyperplasia, inhibits the 5-alpha reductase enzyme, reducing serum dihydrotestosterone levels by 70%.^{1–3} Advertised side-effects include gynaecomastia and sexual dysfunction.⁴ Depression and suicidal behaviour were not identified in initial clinical trials, but the US Food and Drug Administration added depression as a side-effect in 2011 and included suicidal ideation and behaviour in 2022.⁴ However, data on the risk of suicide attempts are limited.^{1,2}

We chose to focus on intentional self-poisoning because it is a common method in suicide attempts and because we had robust data on this aspect.^{5,6} This study aimed to investigate the possible association between finasteride use and the risk of suicide attempts by self-poisoning.

Report

This case–control study used data from multiple Danish registries to investigate the potential link between finasteride use and suicide attempts by self-poisoning. The Danish Poison Information Center (DPIC) provides a nationwide, 24-h telephone advisory service and records all calls.⁵ Our study identified male patients listed in the DPIC database from 2008 to 2013 with reports of poisoning under suicidal intent and designated them as cases. Individuals with multiple suicide attempts were included in the study once, based on their initial recorded attempt. For each case, 10 controls

matched by age, sex, date, and type of residence municipality were selected from the general Danish population using the Danish Civil Registration System.⁷

Residence was classified as capital, rural, provincial, suburban or metropolitan, based on Statistics Denmark.⁸ The index date for each case was set as the date of their suicide attempt, while for controls, it was the date of inclusion in the study. Controls were selected under the condition that they were alive on the index date, ensuring comparability with cases.

We obtained data on filled prescriptions for finasteride tablets among cases and controls within the year prior to the index date from the Danish National Prescription Registry.⁷ This included prescriptions for finasteride 1-mg or 5-mg tablets (Anatomical Therapeutic Chemical codes G04CB01 and D11AX10).

Furthermore, data were collected on psychiatric diagnoses coded according to the International Classification of Diseases, Tenth Revision (ICD-10). Specifically, we recorded bipolar disorder (ICD-10 code F31) and schizophrenia (ICD-10 code F20). These diagnoses were made at Danish public hospitals, where they were recorded during outpatient visits or inpatient stays from 1995 until the index date. This information was sourced from the Danish Psychiatric Central Research Register,⁷ which used the ICD-10 to categorize conditions.

Occupational status during the week prior to the index date was derived from the Danish Register for Evaluation of Marginalization.⁷ Occupations were categorized as

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Table 1 Characteristics of the study population

Characteristics	Cases (N= 3366)	Controls (N= 33 660)
Age at index date (years), mean (SD)	40.1 (16.4)	40.1 (16.4)
Year of birth, mean	1971	1971
Type of residential municipality at index date, n (%)		
Capital city	935 (27.8)	9350 (27.8)
Rural	735 (21.8)	7350 (21.8)
Provincial town	720 (21.4)	7200 (21.4)
Suburban	532 (15.8)	5320 (15.8)
Large city	444 (13.2)	4440 (13.2)
Occupational status 1 week before index date, n (%)		
Self-supporting	1129 (33.5)	26 011 (77.3)
Public benefits	2035 (60.5)	5599 (16.6)
Retired	202 (6.0)	2050 (6.1)
Diagnosed in hospital before index date, n (%)		
Bipolar disorder	183 (5.4)	69 (0.20)
Schizophrenia	371 (11.0)	285 (0.85)

self-supporting (employed or financially independent), receiving social benefits or retired.

We employed conditional logistic regression to analyse the association between finasteride use and the risk of suicide attempts, both unadjusted and adjusted for the confounders, bipolar disorder, schizophrenia and occupational status. However, depression and anxiety were not adjusted for, as they are considered potential mediators of the effects between finasteride use and suicide attempts.⁹

We identified 3366 cases of suicide attempts and matched them with 33 660 controls. The mean age was 40.1 years (SD 16.4), as detailed in Table 1. Among the control group, 0.35% ($n=117$) had used finasteride, compared with 0.36% ($n=12$) in the case group (Table 2).

The analysis showed no significant association between finasteride treatment and the risk of suicide attempts, with an odds ratio of 1.03 (95% confidence interval 0.56–1.88, $P=0.93$). This conclusion remained consistent after adjusting for prior diagnoses of schizophrenia, bipolar disorder and occupational status (adjusted odds ratio 0.88, 95% CI 0.45–1.71, $P=0.71$).

In this study, we found no association between the use of finasteride and suicide attempts. The odds ratios do not show a clear change in risk for finasteride users, but the wide confidence intervals suggest uncertainty, indicating the potential for both increased and decreased risk. According to a recent systematic review, the signal regarding suicidality and finasteride is based on spontaneously reported adverse events.⁴ An analysis of spontaneous adverse drug reaction reports involving finasteride from VigiBase (the World Health Organization's database) suggested higher

rates of suicide-related events in patients <45 years old, but not in older individuals, with an inverse dose–response relationship.² However, the spontaneous adverse event reporting system is susceptible to bias and differential reporting, resulting in a high risk of false positive findings.¹⁰ A large Swedish register-based cohort study involving men aged >49 years found no association between finasteride use and suicide,¹ which aligns with our findings. Our study lacked the statistical power for subgroup analyses on age and dose response.

Our study has limitations to consider. We used prescription data to identify finasteride use, but adherence cannot be verified, affecting exposure accuracy. The study focused solely on self-poisoning suicide attempts, limiting generalizability to other methods. Additionally, individuals with pre-existing psychiatric conditions may be less likely to receive finasteride, introducing potential confounding.

In conclusion, our findings suggest no association between finasteride use and the risk of suicide attempts through self-poisoning.

Learning points

- The study found no association between finasteride use and the risk of suicide attempts through self-poisoning.
- Despite the findings, the broad confidence intervals suggest uncertainty that warrants further investigation into finasteride's psychiatric effects.
- Health professionals should continue to monitor patients on finasteride for any psychiatric symptoms.

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Conflicts of interest

The authors declare no conflicts of interest.

Data availability

Due to privacy considerations, no further data are available beyond what is included in the manuscript.

Ethics statement

The study was approved by the Danish Data Protection Agency (BBH-2013-039/02514). Informed consent was waived as the study only used register data, in accordance with Danish law.

Table 2 Use of finasteride in the year before the index date

Treatment in the year before index date	Cases, n (%)	Controls, n (%)	Odds ratio (95% confidence interval)	
			Unadjusted	Adjusted ^a
Finasteride use: yes	12 (0.36)	117 (0.35)	1.03 (0.56–1.88)	0.88 (0.45–1.71)
Finasteride use: no	3354 (99.6)	33 543 (99.7)	$P=0.93$	$P=0.71$

^aAdjusted for bipolar disorder, schizophrenia and occupational status.

Patient consent

Not applicable.

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