Public Health Reporting Germany
Journal of Health Monitoring 2026 | 11 | 23 **FOCUS**

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Suicidal thoughts and suicide attempts among adults in Germany: Prevalence estimates from the 2024 'Health in Germany' Panel

Authors: Maria Ana Gonzalez-Alvarez[1,2], Julia Talamo[1], Carmen Schlump[3], Madita Fahrenwald[1], Ilter Öztürk[1], Anna Meier[1], Kathleen Pöge[1], Niels Michalski[1], Lena Walther[1]

Institutions: 1 Robert Koch Institute, Department of Epidemiology and Health Monitoring, Berlin, Germany 2 Charité–Universitätsmedizin Berlin, Institute of Public Health, and Institute of Tropical Medicine and International Health, Berlin, Germany 3 Robert Koch Institute, Department of Infectious Disease Epidemiology, Berlin, Germany

Abstract

Background: Reliable population-based information on suicidal thoughts and suicide attempts is essential for effective suicide prevention and public mental health practice but is lacking in Germany.

Methods: We used representative data from 27,102 adults participating in the 2024 annual survey from the 'Health in Germany' panel to estimate 12-month and lifetime prevalences of suicidal thoughts and attempts. Sociodemographic patterns and service contacts (hospital/emergency department, helpline/chat, police) following suicide attempts were assessed.

Results: In 2024, 6.0 % (95 % CI: 5.6 %–6.4 %) of adults reported suicidal thoughts in the past 12 months and 18.0 % (17.4 %–18.7 %) over their lifetime. Suicide attempts were reported by 0.6 % (0.4 %–0.7 %) of adults in the past year and 4.8 % (4.5 %–5.3 %) over the lifetime. Higher prevalence of suicidal thoughts and suicide attempts was observed among younger adults and individuals with lower equivalised household income. Lifetime prevalence of suicide attempts was higher among women than men and for those with lower educational attainment. Among those reporting a lifetime suicide attempt, 41.5 % (37.5 %–45.7 %) reported hospital or emergency department contact in connection with their most recent attempt, while 53.8 % (49.7 %–57.8 %) reported no contact with any of the three assessed services.

Conclusions: Suicidal thoughts and suicide attempts, both important factors associated with suicide and serious health concerns in their own right, represent a substantial and socially patterned public health burden. Prevention efforts should focus on the needs of young people and address the elevated burden associated with socioeconomic disadvantage. Continuously collected population-based survey data can complement other data sources within national suicidality surveillance systems.

Keywords: Adult, Mental health, Prevalence, Public health, Suicide, Suicide prevention, Suicidal thoughts, Suicide attempt, Suicidal ideation, Socioeconomic inequality, Health service use, Germany, RKI Panel, Population-based survey

1. Introduction

Suicide represents a major global public health burden, accounting for more than 720,000 deaths worldwide each year [1]. In Germany, suicides are routinely monitored through official cause-of-death statistics, with 10,372 deaths registered in 2024, corresponding to a suicide mortality rate of approximately 12.4 deaths per 100,000 inhabitants [2]. Based on age-standardised data from 2021 or the closest available year across Organisation for Economic Co-operation and Development

Article and Journal Information

Submitted: 26.06.2026
Accepted: 01.09.2026
Published: 11.11.2026

Article peer reviewed

Citation: Gonzalez-Alvarez MA, Talamo J, Schlump C, Fahrenwald M, Öztürk I, Meier A, et al. Suicidal thoughts and suicide attempts among adults in Germany: Prevalence estimates from the 2024 'Health in Germany' Panel.
J Health Monit. 2026;11:23.
doi: 10.25646/14442

Maria Ana Gonzalez-Alvarez
Gonzalez-AlvarezM@rki.de

Robert Koch Institute, Berlin
Journal of Health Monitoring
www.rki.de/jhealthmonit-en

The German version is available at
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Federal health reporting
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(OECD) countries, Germany's suicide rate was slightly below the OECD average [3]. Importantly, after four decades of mostly declining or stable rates, Germany's suicide mortality rose notably in 2022, with the 2024 rate slightly higher, motivating the development of a national suicide prevention strategy [4].

While suicides are routinely reported in Germany, a surveillance system capturing suicidal thoughts and suicide attempts is lacking. Beyond their association with suicide mortality, suicidal thoughts and suicide attempts are important public health outcomes in their own right and form part of the broader phenomenon of suicidality [5, 6]. The frequently cited 'iceberg' model conceptualises suicidality as a spectrum of outcomes with decreasing prevalence and increasing severity, ranging from suicidal thoughts to suicide deaths [7]. The prevalence of suicide attempts lies between these endpoints and exceeds that of suicides by an order of magnitude, often estimated at around 10 to 20 people with one or more suicide attempts per suicide, with some estimates suggesting the possibility of an even larger ratio [8–11].

Given that suicidal thoughts and suicide attempts are markers of substantial psychological distress and place a significant burden on affected individuals, their social networks and health care systems [12, 13], they should be direct targets of prevention efforts [14, 15]. While closely related, suicidal thoughts, suicide attempts, and suicide deaths represent partially distinct phenomena with potentially different associated factors and pathways [15, 16]. Differences in, for example, gender distribution between fatal and non-fatal suicidal behaviour further support considering them as partially independent health indicators [14, 17].

Reliable information on the frequency of suicidal thoughts and suicide attempts, as well as on their distribution by key sociodemographic factors, is therefore essential to guide the development and implementation of public health strategies addressing all facets of suicidality. Accordingly, the World Health Organization (WHO) recommends that suicide attempts be included alongside suicide mortality as key indicators in national surveillance systems in order to identify emerging needs, evaluate intervention effectiveness, and inform national suicide prevention strategies [11]. Additionally, suicide attempts are also included in the European Core Health Indicators (ECHI) framework which provides standardised indicators for health monitoring across Europe [18] as well as the indicator framework of the Mental Health Surveillance in Germany [19].

In line with WHO suicide prevention guidelines, different data sources can contribute to the surveillance of suicidal thoughts and suicide attempts, including hospital and emergency department data, police records, and population-based surveys, among others [6, 11]. These sources differ in their population coverage, timeliness, and ability to capture different manifestations of suicidal behaviour. Nationally representative surveys offer the important advantage of capturing suicidal thoughts and suicide attempts that do not come to the attention of health care or other formal services [7, 17]. They also enable the examination of sociodemographic differences across population groups. Accordingly, population-based survey data on suicidal thoughts and suicide attempts are incorporated into national suicidality surveillance frameworks in several countries, including Canada [20], the United States [21], and France [22], among others.

In Germany, however, nationally representative survey data on suicidality remain limited, fragmented or no longer up to date [23–27]. For example, one large population-based survey assessing suicidal behavior was conducted between 2009 and 2012 as part of the Mental Health Module of the German Health Interview and Examination Survey for Adults (DEGS1–MH) [23]. More recent surveys that have investigated suicidal thoughts and behaviours in German population-based samples differ in their sampling approaches, sample sizes, and assessment methods, limiting comparability across studies [23–27]. These limitations highlight the continued need for regularly collected, nationally representative data on suicidal thoughts and suicide attempts in the country [25–27].

As part of a project which explores the use of different data sources to assess the prevalence of suicide attempts and its development over time [28], the present study addresses this gap by providing up-to-date estimates and lay-

Key messages

- In 2024, 6.0 % of adults in Germany reported suicidal thoughts in the past 12 months and 18.0 % over their lifetime, while suicide attempts were reported by 0.6 % and 4.8 %, respectively.
- Age and income gradients were observed, with younger adults and those with a lower equivalised household income showing higher prevalence of suicidal thoughts and attempts.
- Lifetime prevalence of suicide attempts was higher among women than men and for those with lower educational attainment.
- Two in five adults with a suicide attempt reported contact with a hospital or emergency department, indicating that routine data from these settings have the potential to capture a considerable part of the population with suicide attempts.
- Population-based surveys complement routine data by detecting suicide attempts among people without contact to services.

ing the foundation for continuous suicidality surveillance. To this end, cross-sectional data from the 2024 annual survey of the 'Health in Germany' Panel ('*Gesundheit in Deutschland*'), conducted by the Robert Koch Institute (RKI) were used to estimate the 12-month and lifetime prevalence of suicidal thoughts and suicide attempts among adults living in Germany, estimate the number of adults reporting suicide attempts, and examine differences by gender, age, educational attainment, and income. In addition, the study examines patterns and overlaps in reported contacts following suicide attempts to assess the potential contribution of different routine data sources to suicidality surveillance, their complementarity, and possible gaps in ascertainment.

2. Methods

2.1 Study design and sample

This study is based on data from the 2024 annual survey of the Panel 'Health in Germany' (RKI Panel 2024; May 2024–January 2025; data set version 5), an ongoing population-based panel survey conducted by the RKI to support continuous health monitoring in Germany [29]. The target population comprises all individuals aged 16 years and older living in private households with their main residence in Germany [29]. In the 2024 panel wave, analyses were restricted to adults, defined as participants aged 18 years or older at the time of survey participation. This restriction therefore excluded respondents who were still minors at measurement, while retaining those who reached adulthood between recruitment and data collection [30]. In early 2024, nationwide recruitment was conducted using a two-stage stratified random sampling design [31].

In the first stage, 359 primary sampling units were randomly selected from all German municipalities, accounting for federal state and municipality size [31]. In the second stage, addresses were drawn from local resident registers [31]. A multi-stage weighting procedure was applied to reduce distortions due to selective participation and deviations of the sample from the population structure [32]. The recruitment weights accounted for the sampling design and were calibrated to official population statistics and the 2021 Microcensus with respect to age, gender, federal state, municipality size, educational attainment, and household size [32]. Additional dropout weights based on inverse probability weighting were calculated to account for selective participation across repeated survey waves using information collected during recruitment [32].

Selected individuals were invited to complete a short baseline survey and to consent to future participation in the panel [31]. In 2024, the RKI Panel comprised 46,863 registered participants aged 18 years or older, including 24,881 women, 21,856 men, and 126 individuals with another gender identity, who were invited to participate in three survey sub-waves [30]. For each sub-wave, participants were assigned to one of four rotating questionnaire versions administered in German using a mixed-mode design (online and paper-and-pencil); all versions included sociodemographic items in the first sub-wave [29]. Data collection took place from May 2024 to January 2025, with response rates ranging from 75 % to 81 % across sub-waves [30]. The cumulative response rate, which combines initial recruitment response and subsequent wave participation and is calculated relative to all individuals originally invited to the recruitment study (approximately 167,000 individuals), was 22 % [30]. Additional details on the study methodology can be found in the report on the first recruitment study [31].

The 2024 RKI 'Health in Germany' panel

Data holder: Robert Koch Institute

Objectives: To provide comprehensive data on the health status, health-related behaviour and health care of the population in Germany, with the future possibility of longitudinal comparisons and analysis of trends over time

Study design: Panel study with a mixed-mode approach (participation online or by postal questionnaire)

Population: German-speaking population aged 18 and over who live in private households and have their main residence in Germany

Sample: Probabilistic/representative sample of the 'Health in Germany' panel infrastructure

Participants in the 2024 annual wave: A total of 41,376 of the individuals registered in the panel took part in at least one of the three sub-waves in 2024.
Questionnaire A: 14,759 women, 12,374 men, 66 persons with other gender identities
Questionnaire B: 14,828 women, 12,258 men, 61 persons with other gender identities
Questionnaire C: 14,709 women, 12,329 men, 64 persons with other gender identities
Questionnaire D: 14,872 women, 12,368 men, 66 persons with other gender identities

Data collection:
1st sub-wave: 28.05.2024–05.08.2024
2nd sub-wave: 12.08.2024–14.10.2024
3rd sub-wave: 28.10.2024–06.01.2025

More information at www.rki.de/panel-en

2.2 Measures

Suicidal thoughts and suicide attempts

In 2024, Questionnaire C (Infobox) focused on mental health and included two items to assess 12-month and lifetime prevalence of suicidal thoughts and suicide attempts, based on items adapted from the Canadian Suicide Surveillance Indicator Framework [33] and the United States National Comorbidity Survey [34]. Participants were asked: 'Have you ever seriously thought about taking your own life?' and 'Have you ever tried to take your own life?' with the response options 'yes, within the last 12 months', 'yes, but not within the last 12 months' and 'no'. The two affirmative response categories were combined to assess lifetime prevalence. Participants reporting a lifetime suicide attempt were additionally asked: 'In connection with your most recent suicide attempt, did you have contact with any of the following services?'. The three services assessed were 'hospital (e.g. emergency department or inpatient treatment)', 'crisis hotline or crisis chat (e.g. TelefonSeelsorge)', and 'police'. Each service was assessed separately with 'yes' or 'no' response options, allowing multiple contacts to be reported. The question did not specify the timing of the contact relative to the suicide attempt. To support participant safety, participants were provided with contact information for TelefonSeelsorge, a free, anonymous, 24-hour telephone counselling service.

Sociodemographic variables

Sociodemographic variables used for stratification and adjustment included gender, age group, educational attainment, and equivalised monthly household income, reflecting key sociodemographic dimensions considered in health monitoring and reporting in Germany [35]. Both sex assigned at birth and gender identity (including an open response option) were surveyed in the RKI Panel [36]. The main analyses were stratified by gender and distinguished between participants identifying as women and men including both cisgender and transgender respondents. Gender-diverse participants who did not identify within these binary categories were not shown separately in the main stratified analyses due to the small number of cases, but were included in overall estimates, resulting in slight differences between total sample counts and the summed counts for women and men. The Supplementary material (tables S2a–d) includes results of an exploratory analysis using a finer-grained gender stratification into the categories cis female, cis male, trans or gender-diverse, which could not be included as main analyses owing to the limited sample size in the third group.

Age was categorised into the following age groups: 18–29, 30–44, 45–64, 65–79 and 80 years and older. Educational attainment was operationalised using the *Comparative Analysis of Social Mobility in Industrial Nations* (CASMIN) classification [37]. Based on the highest level of formal education attained, participants were categorised into three groups: low (no formal or lower secondary education without a vocational qualification), medium (intermediate or upper secondary education with a completed vocational qualification), and high (tertiary education, including university degrees) [37]. Lastly, the income variable was measured as disposable equivalised household income. The disposable equivalised household income comprises the household's total income after taxes and social transfers divided by the sum of the weights of all household members according to the new OECD scale [38]. Missing income values were imputed using predictive mean matching, including sociodemographic covariates as predictors. It was categorised into three groups relative to the weighted sample median (approximately €2,000 per month): below 60 % of the median, between 60 %–150 % of the median, and above 150 % of the median.

2.3 Statistical analysis

All analyses were conducted using version 5 of the RKI Panel 2024 dataset. Analyses were performed in Stata 17.0 using survey procedures (svy) to account for the complex sampling design, unequal sampling probabilities, and selective participation. Survey weights were applied, and variance estimates were calculated using Taylor linearisation. Missing data were explored descriptively, and analyses were based on complete cases.

Weighted prevalence estimates and corresponding 95 % confidence intervals (CIs) were calculated for 12-month and lifetime suicidal thoughts and suicide attempts. To estimate the absolute number of affected adults living in Germany, population totals were derived using population weights. Prevalence estimates were stratified by gender, age group, educational attainment, and equivalised household income. Stratified estimates were only reported when sufficient statistical precision was achieved, defined as a lower confidence interval bound exceeding two-thirds of the point estimate in line with common data reliability and disclosure control practices used in official statistics.

Associations between sociodemographic characteristics and the suicidality indicators were examined using survey-weighted Poisson regression models with robust variance estimation and reported as prevalence ratios (PRs) with 95 % CIs to quantify sociodemographic differences in prevalence and assess whether observed patterns persisted after adjustment for the other sociodemographic characteristics included in the models. Reference categories were selected a priori for analytical and interpretative purposes. Men and the 45- to 64-year age group were used as reference categories, while the highest education and income categories were chosen to facilitate the assessment of gradients and inequality;

these choices should not be interpreted as normative. Bivariable analyses were conducted overall and stratified by gender, in accordance with the SAGER guidelines [39]. Adjusted models initially included gender, age group, educational attainment and equivalised household income. Multicollinearity was assessed using variance inflation factors (VIFs). Given the conceptual overlap between education and income, additional models including each socioeconomic indicator separately were conducted as sensitivity analyses. A further sensitivity analysis restricted the sample to participants aged 25 years and older to assess whether the observed associations differed after excluding younger adults, among whom educational trajectories may be incomplete and equivalised household income may more often reflect the socioeconomic resources of the parental household. Interaction analyses were prespecified to examine whether associations between sociodemographic characteristics and suicidality indicators (excluding 12 month suicide attempts due to the small number of cases) differed by gender. Lastly, reported contacts with the three assessed services in connection with the most recent suicide attempt were analysed descriptively using weighted proportions and 95 % CIs. This study was conducted and reported in accordance with the STROBE guidelines for observational studies [40] (Supplementary material, Table S7).

3. Results

3.1 Descriptive characteristics of the study population

The analytic sample comprised 27,102 respondents aged 18 to 99 years. Weighting resulted in a composition by gender, age and educational attainment matching the distribution in the adult population living in Germany. Unweighted percentages indicate higher participation among women than men, among middle-aged and older adults compared with younger adults and among individuals with higher levels of education compared with those with lower levels of education (Table 1). The distribution of income was broadly similar between unweighted and weighted data. Given that missing values for the indicators of suicidal thoughts and suicide attempts were below 2 %, complete case analyses were conducted.

3.2 Prevalence of suicidal thoughts and suicide attempts

In 2024, 6.0 % of participants reported suicidal thoughts during the past 12 months, and 18.0 % reported lifetime suicidal thoughts. The prevalence of suicide attempts was 0.6 % during the last 12 months and 4.8 % over the lifetime (see Table 2), corresponding to an estimated 399,050 (95 % CI: 295,340–502,761) and 3,349,004 (95 % CI: 3,044,451–3,653,557) adults living in Germany, respectively.

Table 1: Sociodemographic characteristics of respondents participating in the RKI Panel 2024, Questionnaire C. Source: RKI Panel 2024

Variable	2024		
	Unweighted n	Unweighted %	Weighted %
Gender (*)			
Female	14,709	54.3	51.0
Male	12,329	45.5	48.8
Age group			
18–29 years	3,829	14.1	15.9
30–44 years	5,761	21.3	23.5
45–64 years	9,025	33.3	33.4
65–79 years	6,201	22.9	18.5
≥80 years	2,286	8.4	8.7
Education (*)			
Low	5,201	19.2	33.2
Medium	12,964	47.8	46.3
High	8,888	32.8	20.3
Income			
Low	3,609	13.3	16.5
Medium	17,235	63.6	64.3
High	6,258	23.1	19.2
Total	**27,102**	**100.0**	**100.0**

(*) Missing values: gender, n = 64 (0.2 %); educational attainment, n = 49 (0.2 %)

The prevalence of suicidal thoughts was similar among women and men, whereas lifetime suicide attempts were more common among women. An exploratory analysis with insufficient statistical precision showed higher point estimates of suicidality across indicators among transgender individuals and those reporting a non-binary gender than among cis women and men (Supplementary material, Table S2a–d). This also explains why the estimate for lifetime suicidal thoughts for the total adult population, which includes data from non-binary participants, does not fall between the estimates for women and men (Table 2).

An age gradient was observed across all indicators, with the highest prevalence among young adults aged 18 to 29 years and lower prevalence of thoughts (12-month and lifetime) and attempts (lifetime) in older age groups (Table 2).

Patterns by educational attainment differed across indicators. For suicidal thoughts, prevalence was highest among individuals with medium educational attainment. In contrast, lifetime suicide attempts showed higher prevalences among individuals with low and medium educational attainment than among those with high educational attainment. A clear social gradient was observed for equivalised household income across indicators, with higher prevalence of suicidal thoughts and suicide attempts among individuals with lower equivalised household income.

The indicator of suicide attempts in the past 12 months did not meet the precision criteria for stratified analyses due to the small number of events (n = 114) and is therefore not

Table 2: Weighted 12-month and lifetime prevalence of suicidal thoughts and suicide attempts among adults aged 18+ by gender. Source: RKI Panel 2024

Variable	Total		Women		Men	
	%	(95 % CI)	%	(95 % CI)	%	(95 % CI)
Suicidal thoughts (last 12 months)						
Overall	6.0	(5.6–6.4)	5.5	(5.0–6.1)	6.3	(5.7–6.9)
Age group						
18–29 years	10.5	(9.3–11.9)	11.4	(9.7–13.5)	9.3	(7.6–11.4)
30–44 years	6.2	(5.4–7.1)	6.4	(5.3–7.8)	6.0	(4.9–7.4)
45–64 years	5.5	(4.9–6.2)	4.3	(3.6–5.2)	6.6	(5.6–8.0)
65–79 years	3.4	(2.9–4.0)	3.0	(2.3–3.9)	3.9	(3.2–4.9)
≥ 80 years	4.2	(3.2–5.4)	4.1	(2.8–6.0)	4.3	(3.1–6.1)
Education						
Low	5.8	(5.0–6.6)	5.2	(4.2–6.5)	6.3	(5.2–7.7)
Medium	6.7	(6.2–7.3)	6.2	(5.5–7.0)	7.1	(6.2–8.1)
High	4.6	(4.1–5.2)	4.4	(3.7–5.3)	4.7	(4.0–5.5)
Income						
Low	9.4	(8.1–10.8)	9.3	(7.6–11.4)	9.1	(7.3–11.4)
Medium	5.6	(5.2–6.1)	4.8	(4.3–5.4)	6.5	(5.7–7.3)
High	4.2	(3.6–4.8)	4.4	(3.6–5.3)	3.9	(3.1–4.9)
Suicidal thoughts (lifetime)						
Overall	18.0	(17.4–18.7)	18.0	(17.1–18.9)	17.8	(16.8–18.8)
Age group						
18–29 years	29.3	(27.4–31.4)	31.2	(28.4–34.1)	27.1	(24.2–30.2)
30–44 years	20.1	(18.7–21.7)	20.2	(18.3–22.2)	19.5	(17.4–21.9)
45–64 years	17.0	(15.9–18.1)	17.1	(15.7–18.5)	16.8	(15.3–18.5)
65–79 years	11.2	(10.3–12.2)	11.0	(9.8–12.4)	11.4	(10.0–13.0)
≥ 80 years	10.2	(8.6–12.1)	10.6	(8.3–13.6)	9.6	(7.4–12.3)
Education						
Low	16.1	(14.8–17.5)	15.2	(13.4–17.1)	16.8	(14.8–18.9)
Medium	20.0	(19.2–20.9)	20.0	(18.9–21.2)	19.7	(18.3–21.2)
High	16.6	(15.6–17.7)	17.8	(16.4–19.4)	15.4	(14.1–16.7)
Income						
Low	23.6	(21.7–25.6)	23.0	(20.5–25.7)	23.7	(20.7–26.9)
Medium	17.5	(16.7–18.3)	17.1	(16.0–18.1)	17.7	(16.4–19.0)
High	15.1	(13.9–16.3)	16.2	(14.5–18.0)	14.0	(12.4–15.7)
Suicide attempts (lifetime)						
Overall	4.8	(4.5–5.3)	5.6	(5.1–6.2)	3.9	(3.4–4.5)
Age group (*)						
18–29 years	7.7	(6.5–9.1)	9.7	(7.8–12.1)	5.7	(4.3–7.5)
30–44 years	5.8	(4.9–6.9)	7.1	(5.8–8.8)	4.2	(3.1–5.7)
45–64 years	4.2	(3.6–4.8)	4.4	(3.7–5.2)	4.0	(3.1–5.0)
65–79 years	3.5	(2.9–4.2)	4.1	(3.3–5.1)	2.7	(1.9–3.7)
Education						
Low	5.9	(5.1–6.9)	6.6	(5.4–8.0)	5.1	(3.9–6.4)
Medium	5.0	(4.6–5.6)	5.8	(5.2–6.6)	4.2	(3.5–4.9)
High	2.6	(2.2–3.0)	3.4	(2.8–4.1)	1.9	(1.5–2.4)
Income						
Low	8.5	(7.3–9.8)	9.1	(7.5–10.9)	7.7	(6.1–9.7)
Medium	4.5	(4.0–5.0)	5.2	(4.6–6.0)	3.6	(3.0–4.4)
High	2.9	(2.3–3.6)	3.3	(2.6–4.2)	2.4	(1.7–3.4)

Unweighted numbers of respondents were 1,457 (12 month suicidal thoughts), 4,594 (lifetime suicidal thoughts), 114 (12 month suicide attempts) and 1,073 (lifetime suicide attempts)

(*) Estimates for individuals aged 80 years and older for lifetime suicide attempts did not meet the precision criteria and are therefore not shown in the table and are presented in Table 1 in the Supplementary material

presented. However, the observed sociodemographic patterns were broadly consistent with those described for the other indicators, with similar prevalences for women and men, higher prevalences among younger adults and individuals with lower socioeconomic position. Results for this indicator are provided in Supplementary material, Table S1.

3.3 Bivariable and multivariable associations

Bivariable (Supplementary material, Tables S3a–c) and multivariable analyses including all sociodemographic variables (Table 3) showed patterns broadly consistent with the descriptive findings presented above. Both before and after adjustment for age group, educational attainment, and equivalised household income, prevalences of suicidal thoughts were similar between women and men, while women showed a higher prevalence of lifetime suicide attempts than men. Younger adults, particularly those aged 18–29 years, showed higher adjusted prevalence ratios across indicators, while older age groups showed lower prevalence ratios.

Lower equivalised household income remained consistently associated with higher prevalence across indicators of suicidal thoughts and suicide attempts. In contrast, associations with educational attainment were weaker for suicidal thoughts and did not follow a clear gradient after adjustment, whereas participants with low and medium educational attainment showed elevated adjusted prevalence ratios for lifetime suicide attempts compared to those with high educational attainment.

Due to the limited number of events and insufficient statistical precision, results for suicide attempts during the past 12 months are presented in Supplementary material Table S1 exclusively.

Sensitivity analyses supported the main findings (Supplementary material, Table S4a–d). Variance inflation factors indicated no problematic collinearity between the independent variables (mean VIF = 1.34; Supplementary material, Table S5). Models including educational attainment and equivalised household income separately yielded similar results, with equivalised household income showing stronger associations with suicidal thoughts and suicide attempts than educational attainment, particularly for suicidal thoughts. Restricting the analyses to participants aged 25 years and older did not substantially alter the results (Supplementary material, Table S4d).

3.4 Interaction analysis

Across indicators, the gender-by-age group interaction was statistically significant for suicidal thoughts (design-adjusted Wald test: $p = 0.007$) in the past 12 months. For suicidal thoughts, adjusted prevalences were slightly higher among women than men in the youngest age group; these differences narrowed, shifted direction in middle adulthood, and were minimal at higher ages (Figure 1). Gender differences were largest in middle adulthood (45–64 years), with higher adjusted prevalence observed among men. For 12 month suicide attempts, no interaction analyses were conducted due to the small number of events and the resulting limited statistical precision. No evidence of an interaction between gender and educational attainment or gender and income was found. Complete Wald test results and adjusted prevalence estimates derived from the interaction models are provided in Supplementary material, Tables S6a–6j.

Table 3: Adjusted prevalence ratios (aPRs) for 12 month and lifetime suicidal thoughts and suicide attempts by gender, age group, educational attainment and equivalised household income. Source: RKI Panel 2024

Variables	Suicidal thoughts (past 12 months)		Suicidal thoughts (lifetime)		Suicide attempts (lifetime)	
	aPR	(95 % CI)	aPR	(95 % CI)	aPR	(95 % CI)
Gender (ref = Male)						
Female	0.88	(0.77–1.01)	1.03	(0.95–1.11)	1.44	(1.21–1.71)
Age group (ref = 45–64 years)						
18–29 years	1.74	(1.46–2.08)	1.63	(1.48–1.80)	1.77	(1.40–2.23)
30–44 years	1.16	(0.97–1.40)	1.18	(1.07–1.30)	1.48	(1.18–1.85)
65–79 years	0.60	(0.49–0.75)	0.65	(0.58–0.72)	0.73	(0.57–0.93)
≥ 80 years	0.73	(0.54–1.00)	0.59	(0.49–0.71)	0.48	(0.31–0.74)
Education (ref = High)						
Low	1.19	(0.97–1.47)	1.00	(0.89–1.13)	2.23	(1.71–2.91)
Medium	1.22	(1.06–1.42)	1.07	(0.99–1.16)	1.66	(1.38–1.99)
Income (ref = High)						
Low	2.15	(1.71–2.70)	1.57	(1.39–1.78)	2.30	(1.77–2.98)
Medium	1.39	(1.15–1.68)	1.23	(1.11–1.36)	1.39	(1.09–1.78)

Survey-weighted Poisson regression models accounting for the complex survey design were used to estimate adjusted prevalence ratios (aPRs), adjusting for gender, age group, educational attainment and equivalised household income. Reference categories are shown in parentheses.

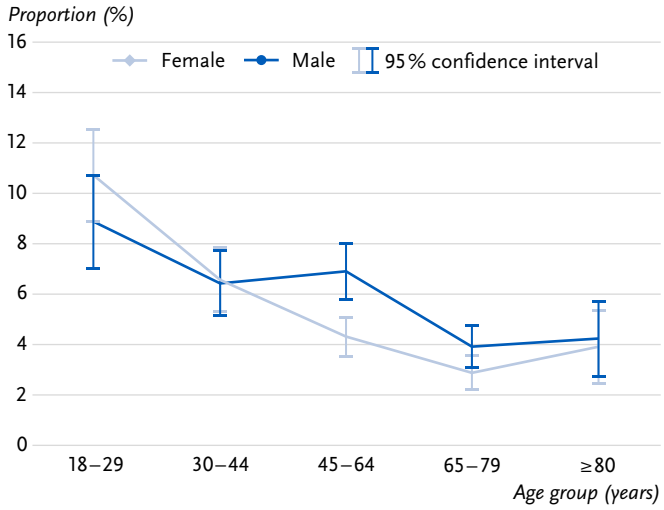


Figure 1: Adjusted prevalence of suicidal thoughts in the past 12 months by gender and age group. Source: RKI Panel 2024
Adjusted prevalences were estimated from survey-weighted Poisson regression models including gender-by-age interaction terms and adjusted for educational attainment and equivalised household income. Error bars indicate 95 % confidence intervals

3.5 Points of contact in connection with the most recent suicide attempt

Among respondents with a lifetime suicide attempt, hospital or emergency department contact was the most frequently reported of the three assessed service contacts in connection with the most recent attempt (41.5 %, 95 % CI: 37.5 %–45.7 %), followed by police contact (11.8 %, 95 % CI: 9.0 %–15.3 %) and crisis hotline or chat services (9.8 %, 95 % CI: 7.4 %–12.9 %). Slightly more than half of respondents reported no contact with any of the three assessed services in connection with their most recent suicide attempt (53.8 %, 95 % CI: 49.7 %–57.8 %).

Hospital or emergency department contact was frequently reported as the only service contact (27.4 %, 95 % CI: 24.0 %–31.2 %), while 14.5 % (95 % CI: 11.5 %–18.3 %) of respondents reported contact with two or more of the assessed services. The overlap between services varied by type of contact. Police contact rarely occurred in isolation: most individuals who reported police contact also indicated the use of hospital or emergency department services (86.6 %, 95 % CI: 77.2 %–92.5 %). Among respondents who mentioned using crisis hotline or chat services, a substantial proportion also reported hospital contact (63.8 %, 95 % CI: 48.7 %–76.7 %), and a smaller share reported contact with the police (28.8 %, 95 % CI: 17.5 %–43.4 %). Only a small proportion reported contact with all three services (2.4 %, 95 % CI: 1.3 %–4.4 %).

4. Discussion

This study aimed to provide up-to-date, nationally representative prevalence estimates of suicidal thoughts and suicide attempts among adults in Germany using data from the 2024 annual survey of the 'Health in Germany' panel. In 2024, about 6 % of adults reported suicidal thoughts in the past year and 18 % across their lifetime. Suicide attempts were substantially less common than suicidal thoughts, occurring at roughly one tenth the prevalence in the past 12 months and one quarter over the lifetime. When extrapolated to the population, this corresponds to a substantial burden: the data suggest between about 295,340 and 502,760 adults in Germany attempted suicide at least once in the past year. Clear age and income gradients were observed across indicators, with higher prevalences among younger adults and individuals with lower equivalised household income. Educational differences were less consistent across indicators; however, a higher lifetime prevalence of suicide attempts was found among those with lower levels of education. While suicidal thoughts did not show pronounced gender differences, the prevalence of lifetime suicide attempts was higher among women than men. Among the three assessed service contacts in connection with the most recent suicide attempt, hospital or emergency department contact was the most commonly reported.

National and international comparisons

While the prevalence estimates presented in this study were in the same order of magnitude as those reported in earlier population-based studies conducted in Germany, they were generally higher than those previously reported. Data from the German survey within the European Study of the Epidemiology of Mental Disorders (ESEMeD, 2002–2003) showed lifetime prevalences of suicidal thoughts of 11.3 % among women and 8.1 % among men, and lifetime prevalences of suicide attempts of 2.2 % and 1.2 %, respectively [26]. Similarly, data from the mental health module of the German Health Interview and Examination Survey for Adults conducted by the Robert Koch Institute (DEGS1–MH, 2009–2012) reported lifetime prevalences of 11.1 % for suicidal thoughts and 3.3 % for suicide attempts in a nationally representative sample [23]. More recent survey-based research published in 2025, while not directly comparable due to differences in outcome definitions, suggests somewhat higher prevalences of combined suicidal thoughts and behaviours, with a lifetime prevalence of 15.5 % and a 12-month prevalence of 5.1 % [25].

The present study's prevalence estimates were partly also somewhat higher than those reported in earlier studies from European and other high-income countries but were comparable to more recent international findings. A systematic review and meta-analysis of 24 European population-based studies conducted between 2008 and 2017 reported pooled lifetime prevalences of 9.1 % for suicidal thoughts and 2.9 % for suicide attempts, with corresponding 12-month prevalences of 3.6 % and 0.6 %, respectively [9]. In France, the 2024

Public Health Barometer reported a 12-month prevalence of 5.2 % for suicidal thoughts and 0.4 % for suicide attempts, while the lifetime prevalence of suicide attempts was 5.4 % [41], similar to the estimates observed here for Germany. Data from the 2024 U.S. National Survey on Drug Use and Health showed that 5.5 % of adults reported serious suicidal thoughts, 1.8 % made a suicide plan, and 0.8 % attempted suicide in the past year [42]. In addition, recent data from the Adult Psychiatric Morbidity Survey (APMS) in England indicate higher levels of self-reported suicidal thoughts and suicide attempts in 2023/24 compared with previous survey waves [43]. However, because comparable evidence on temporal trends is lacking for Germany, it cannot be determined whether suicidal thoughts and suicide attempts have similarly increased in recent years.

The estimates for the absolute number of adults with a suicide attempt can also be assessed in relation to official mortality statistics. In Germany, 10,372 deaths by suicide were registered in 2024 [2]. This study estimated that between about 295,340 and 502,760 adults had experienced at least one suicide attempt in the preceding 12 months. Relating this range descriptively to the total number of registered suicides suggests that the number of adults reporting at least one suicide attempt per suicide may be on the order of roughly 30 to 50, higher than the WHO global estimate of more than 20 adults making one or more suicide attempts per adult suicide death [44]. Importantly, this comparison should be interpreted as an approximate descriptive benchmark rather than a precise ratio.

Sociodemographic differences

The present study showed only limited differences by gender, with women exhibiting higher prevalence of lifetime suicide attempts. Although this latter finding is consistent with previous international and national survey studies, as well as evidence on suicide attempts from other sources [43, 45, 46], it stands in contrast to the substantially higher suicide mortality rates observed among men [2]. This apparent discrepancy reflects the well-known 'gender paradox' in suicidality, whereby women report higher non-fatal suicidal behaviour yet men have substantially higher suicide mortality [47]. The gender paradox has been linked to the use of more lethal methods among men, gender role expectations, differences in help-seeking behaviour and social support [26, 44, 47]. Conversely, higher rates of suicide attempts and self-harm among women have been associated with a greater burden of depression, anxiety, trauma-related disorders, and interpersonal violence, as well as gender differences in the expression of psychological distress [47, 48]. Importantly, no single explanation appears sufficient to fully account for the observed gender differences, highlighting the complexity of the phenomenon [48]. In this study, significant interactions between gender and age were observed for suicidal thoughts during the past 12 months, suggesting that age-related patterns may differ between women and men. The interaction was characterized by comparatively higher prevalence among women in younger adulthood and among men in middle adulthood. This pattern is consistent with previous evidence showing that the gender distribution of suicidal behaviour varies across the life course, including age-specific peaks in suicide attempts and suicide mortality [23, 45, 46].

In the exploratory analysis, higher point estimates for several indicators were observed among transgender and gender-diverse individuals compared with cisgender individuals. While these findings need to be interpreted with caution given insufficient statistical precision, they are consistent with previous findings [49, 50]. These patterns may be considered within the framework of minority stress theory [50, 51], which posits that chronic exposure to stigma, discrimination, victimization, and social exclusion contributes to cumulative psychological stress and adverse mental health outcomes [50–52]. Such experiences may increase the risk of depression, anxiety, and fatal and non-fatal suicidality and may be further exacerbated by barriers to accessing appropriate healthcare and social support [50–52].

Stratification by age showed a consistent pattern in this study, with younger adults showing the highest prevalence across all indicators and increasingly lower prevalence estimates in older age groups. This pattern was observed for 12-month measures and, somewhat surprisingly, also for lifetime measures, where higher estimates among older adults might be expected due to an accumulation of events over time. Despite limited statistical precision, the higher 12-month prevalence observed among younger adults for suicidal thoughts and suggested for suicide attempts is consistent with population-based survey findings showing a greater burden of suicidal thoughts and suicidal behaviour among younger age groups [41, 42, 45]. While age might be related to greater willingness to report [53, 54], this finding may also reflect genuine differences between age groups in suicidal thoughts and suicide attempts, as higher levels among young adults have been observed across different data sources. For example, data from emergency departments show a substantial concentration of self-harm presentations in younger age groups. According to the Irish National Self-Harm Registry, individuals aged 13 to 25 years accounted for over a third of all self-harm presentations to emergency departments between 2007 and 2019 [55]. Young adults aged 18 to 25 years alone represented 25.6 % of these cases [55]. Although self-harm encompasses behaviours with differing degrees of suicidal intent and is therefore a broader category than suicidal behaviour or suicide attempts [56], these data provide additional context for age-related patterns. Non-suicidal self-injury, which is particularly prevalent among

adolescents and young adults [57], was not assessed separately in the present study and should therefore be considered when interpreting age group differences, although the suicide-attempt item explicitly referred to trying to take one's own life.

The observed age pattern is in line with findings showing a greater mental health burden among young people along a range of outcomes [58–60], which has been linked to a range of age-group-specific stressors including identity formation, the transition to adulthood and its associated responsibilities, social isolation and loneliness, economic uncertainty surrounding education, employment, and financial independence, as well as broader societal stressors such as climate change and recent societal crises [61]. Some studies suggest that suicidal thoughts and suicide attempts have also increased in recent years among adolescents and young adults, particularly among females [42, 43]. Importantly, as observed for gender, age patterns of suicidal thoughts and suicide attempts differ from those of suicide mortality, which in most settings peaks in middle or later adulthood [1, 44]. This apparent discrepancy has been attributed to multiple factors, most consistently the use of more lethal methods among older adults, as well as increased physical frailty and medical comorbidity, a lower likelihood of rescue, greater social isolation, and lower levels of help-seeking [44]. Other explanations, including differences in suicidal intent, have also been proposed but remain less well established [62]. It has also been suggested that suicide attempts may represent partially distinct phenomena from suicide mortality [63]. These differences in age patterns suggest that prevention efforts should consider the distinct age profiles of suicidal thoughts, suicide attempts, and suicide mortality.

While our finding of lower lifetime prevalences of suicidal thoughts and suicide attempts in older age groups is also consistent with many survey studies [26, 43], lower lifetime prevalence estimates in older adults seem counterintuitive and need to be interpreted cautiously. One possible explanation is that age-specific period effects, e.g. owing to stressors of recent years named above, or unknown cohort effects have resulted in different lifetime prevalences across generations [54]. Chief explanatory candidates include recall and reporting biases. Because suicidal thoughts and suicide attempts are particularly prevalent in adolescence and young adulthood [64], as discussed above, greater temporal distance from these experiences may contribute to lower recall among older age groups. The salience of suicidal experiences, particularly suicidal thoughts, may also be greater closer to their typical onset during adolescence or early adulthood [65]. Evidence for a declining likelihood of lifetime report over time comes from a longitudinal study [65], in which one-third of participants no longer reported previously disclosed lifetime suicide attempts at follow-up, and a review of 19 longitudinal samples [66], which found inconsistency estimates of 47 % for suicidal thoughts and 42 % for suicide attempts. Reluctance to disclose past suicidality and reporting biases [54, 66] may also differ across age groups or cohorts, as older generations grew up in periods of stronger stigma surrounding suicidality and mental illness [54]. A combination of these factors, along with potential selective survival and overrepresentation of those without severe psychiatric morbidity or prior suicidal behaviour in older age groups, may contribute to lower observed lifetime prevalence estimates in older adults [67]. Despite various biases that may play into producing these results, they are informative by, all in all, underscoring the burden of suicidal thoughts and suicide attempts among younger adults. Owing to greater case numbers, lifetime prevalence estimates can also show other sociodemographic patterns occluded by statistical imprecision in 12-month estimates.

While lower educational attainment was found to be associated with a higher prevalence of a suicide attempt in the lifetime, in line with international findings [68–70], equivalised household income showed a more consistent association with suicidal thoughts and attempts in the present study. Although educational attainment and income are closely related, they do not fully overlap and may capture different dimensions of socioeconomic position. Given the cross-sectional nature of this study, the temporal ordering of socioeconomic characteristics, particularly current household income, in relation to suicidal thoughts and suicide attempts cannot be established, and the observed associations should therefore not be interpreted as causal. These associations may be related to broader structural and social determinants, including financial insecurity, employment opportunities, access to healthcare and resources, and social integration [71, 72]. Importantly, suicidal behaviour may also emerge in the context of acute social and economic crises [72]. Recent evidence from a macroeconomic analysis of 175 countries over 27 years concluded that a 1 % increase in unemployment may be associated with a 2 to 3 % increase in suicide rates among adults aged 30 to 59 years [73]. Economic downturns, poverty, and austerity measures may therefore be related to suicidal burden including suicidal thoughts and suicide attempts, underscoring the importance of measures to improve socioeconomic conditions and social protection measures as part of national suicide prevention strategies [72]. The observed social gradient underscores the relevance of policies addressing educational and socioeconomic inequalities for efforts to improve health equity.

Points of contact

In this study, hospital or emergency department contact was the most commonly reported of the three assessed service contacts in connection with the most recent suicide attempt.

Crisis hotline or chat contact and police contact were reported far less frequently. Police contact often co-occurred with hospital contact, while overlap across all three assessed services was low. Similarly, international evidence suggests that medical contact in connection with suicide attempts is common but not universal. In the United States, approximately 60 % of individuals reporting a suicide attempt indicated receiving medical attention, and around 43 % reported an overnight hospital stay [74]. Research from France likewise indicates that a substantial proportion of individuals who attempt suicide do not present to hospitals or other formal medical services [75]. Taken together, these findings suggest that hospitals and emergency departments play a central role in responding to suicide attempts, which is consistent with the acute nature of these events. However, a substantial number of attempts are without service contact, and even those with service contact may not be documented, highlighting the importance of population-based surveys for identifying suicide attempts that would otherwise remain unrecorded. Although the question on points of contact was not designed to assess care and did not include an exhaustive list of support options, such as general practitioners, psychiatrists, psychotherapists, or other counselling and support services, the finding that more than half of respondents reported no contact with any of the three assessed services highlights the need for further research on patterns of service contact and potential barriers to accessing care and support during suicidal crises.

Limitations and strengths

Several limitations should be considered when interpreting these findings. First, there are limitations related to the study design and sampling procedure. Given the cross-sectional study design, associations between socioeconomic characteristics and suicidal thoughts and suicide attempts should not be interpreted as causal effects. Although the probabilistic panel design aims to achieve national representativeness, various sources of selection bias cannot be entirely ruled out [31]. Certain population groups [31, 76] are likely to be underrepresented, particularly individuals with a migration background, especially recent migrants or those with limited German language proficiency, who face linguistic barriers to participation in this German-language survey [77]. Owing to the design of this registry-based self-report survey, people living in institutional settings or precarious housing conditions, homeless individuals, and older adults with functional or cognitive impairments are also known or likely to be underrepresented [31]. Because several of these groups have been reported to have a higher prevalence of suicidal thoughts and suicide attempts, their underrepresentation may have contributed to an underestimation of prevalence estimates [78]. Although the cumulative response rate relative to the original recruitment sample was 22 %, response rates among registered panel participants in the 2024 sub-waves ranged from 75 % to 81 %. The magnitude of non-response bias cannot be inferred from response rates alone [76]. Analyses of selective participation in the 2024 RKI Panel found that sociodemographic characteristics were more strongly associated with panel registration and participation than the health-related characteristics examined, with comparatively small estimated dropout bias for most health-related parameters [32]. In the 2024 sub-waves, self-rated mental health was not associated with participation, and no differences in participation patterns were found across questionnaire types [32]. However, selection specifically related to suicidal thoughts and suicide attempts could not be assessed and therefore cannot be ruled out. Finally, because suicide attempts in the past 12 months were relatively infrequent events, analyses for this outcome showed insufficient statistical precision.

Despite these limitations, a central strength of the study is the quality of the underlying data, which were derived from a survey characterized by a large sample size, probabilistic sampling design, complex weighting procedures, and a mixed-mode data collection approach aimed at approximating the adult population living in Germany [29, 30, 32]. In addition, the panel design and repeated assessment of suicidality across consecutive survey years provide a unique infrastructure for population-based mental health surveillance in Germany [19]. This enables the tracking of temporal trends and future longitudinal analyses of suicidal thoughts and suicide attempts, complementing administrative sources.

Conclusion

The present study provides current population-based estimates for the prevalence of suicidal thoughts and suicide attempts among adults in Germany, addressing an important evidence gap. Suicidal thoughts and suicide attempts affect a substantial proportion of the adult population in Germany, particularly younger adults and individuals with lower equivalised household income. Measures to prevent suicidal thoughts and suicide attempts and address their substantial health burden should consider the needs of these groups as well as social and structural inequalities [2, 72]. While two in five respondents with a lifetime suicide attempt reported contact with a hospital or emergency department in connection with their most recent attempt, more than half reported no contact with any of the three services assessed. The present findings highlight the importance of integrating population-based surveys into national suicidality surveillance systems to capture the community burden of suicide attempts that may not be reflected in health care or other routinely collected data. The incorporation of suicidality indicators into the RKI Panel 2024 provides an important foundation for

continuous surveillance of suicidal thoughts and suicide attempts in Germany and may help identify emerging trends, monitor inequalities, and inform evidence-based suicide prevention strategies and public health policies.

Data protection and ethics

The 2024 'Health in Germany' panel was conducted in strict compliance with the data protection provisions of the EU General Data Protection Regulation (GDPR) and Germany's Federal Data Protection Act (BDSG). The Ethics Committee of the Berlin Medical Association reviewed the study from an ethical perspective in accordance with the current version of the Declaration of Helsinki and raised no fundamental ethical or legal concerns regarding the conduct of the study and the 2024 annual wave (Eth-SB-25-088; former reference number: Eth-63/23, Amendment 1). Participation in the study was voluntary. Participants were informed about the objectives and content of the 2024 annual wave as well as about the processing and protection of their personal data. They provided informed consent either electronically, as part of the online survey, or in writing.

Data availability

Access to the data underlying the results is restricted. The data are accessible for extended use via the Research Data Centre (FDZ) of the Robert Koch Institute if there is a justified research interest. Requests can be made by e-mail to fdz@rki.de. Further information can be found on the following website (German): www.rki.de/fdz.

Funding

The panel 'Health in Germany' 2024 was funded by the Robert Koch Institute and the Federal Ministry of Health. The SESiD project is funded by the Federal Government through the Federal Ministry of Health on the basis of a resolution by the German Bundestag under grant number 2525FSB27A.

Individual author contributions

Substantial contributions to the conception or design of the work: LW, MAGA, JT, CS, MF; to the acquisition of the data for the work: AM, IÖ; to the analysis of the data for the work: MAGA, LW, JT, NM; to the interpretation of the data for the work: MAGA, LW, JT, CS, MF, KP, AM, IÖ, NM. Drafting the work: MAGA, LW, JT; revising the work critically for important intellectual content: MAGA, LW, JT, CS, MF, KP, AM, IÖ, NM. Final version of the manuscript read and approved for publication: MAGA, LW, JT, CS, MF, KP, AM, IÖ, NM.

Declaration of generative Artificial Intelligence (AI) and AI-assisted technologies

The authors used ChatGPT and Grammarly to assist with coding support, language editing, translation, and stylistic refinement of the manuscript. The authors were solely responsible for the study design, data analyses, interpretation of findings, and all scientific conclusions. All outputs generated with these tools were carefully reviewed, edited, and validated by the authors, who assume full responsibility for the final content of the manuscript.

Conflicts of interest

The authors declare that there is no conflict of interest.

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