Health policy 155 (2025) 105273

Contents lists available at ScienceDirect

Health policy

journal homepage: www.elsevier.com/locate/healthpol

Forgone Care of doctor's visits in Germany – Results from three cross-sectional surveys

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ARTICLE INFO

Keywords:
Unmet medical needs
Utilization of health care
Social determinants
Access barriers

ABSTRACT

Background: Forgone care, defined as not using health care despite needing it, leads to adverse outcomes such as increased emergency care use. Our study uses data from German representative surveys (2016, 2021, 2022) to examine the frequency, demographics, and reasons for forgone care.
Methods: Multiple logistic regression models of individual cohorts and pooled data were used to assess the likelihood of forgoing a doctor's visit. Reasons for forgone care were analyzed descriptively and further clustered in different types of barriers.
Results: Of 10,122 participants, 21 % reported forgone care in the past year: 22 % in 2016, 18 % in 2021, and 20 % in 2022. The likelihood of forgone care is highest among women (OR: 1.22 [1.09; 1.37]) and younger adults aged 18–44 years (OR: 1.19 [1.05; 1.34]), whereas participants in partnerships were less likely to forgo care (OR: 0.77 [0.69; 0.87]). Barriers were categorized as systemic (e.g. waiting time; 39 %), psychological (e.g. fear of diagnosis; 22 %), and physical (e.g. difficulty reaching the doctor; 19 %). Younger adults and members of the workforce cited systemic barriers most often, whereas older adults (65+) cited psychological and physical barriers.
Discussion: Targeted interventions for vulnerable groups are needed that reduce barriers for forgone care. Recommendations include more accessible doctor's offices, improved appointment systems, expanded telemedicine, and flexible hours.

1. Introduction

Achieving universal health coverage – meaning that all people have access to the full range of quality health services they need, when and where they need them, without financial hardship – is one of the main targets set by the World Health Organization [1]. Success in reaching this goal varies on an international level, due to the differences in health care systems. One indicator of a successful health system is a low rate of unmet medical needs, defined as a condition or symptom going without adequate diagnosis or treatment [2]. Forgone care can be seen as one aspect of unmet medical needs. A person with forgone care is defined as someone who does not seek health care, despite perceiving a need for it [3]. Negative health outcomes stemming from forgone care vary, ranging from higher use of emergency care services, progression of disease, and impairments in daily activities to higher health care costs [4–6]. As an example for the latter, a study based in the United States found, that patients with heart failure who reported forgone or delayed care spent $8027 more on their annual health care costs in contrast to patients with reporting no forgone or delayed care [6] Thus, it is important to assess the prevalence and reasons for forgone care in order to reduce barriers to health care utilization. In Germany, all legal residents are health-insured and eligible for outpatient and inpatient health care. Health care is almost exclusively covered by the health insurance schemes and co-payments are low compared to other countries. Despite the general availability of health care without financial risks, forgone care is still reported in Germany. Röttger et al. [7], for instance, found a rate of 14 % forgone care in chronically ill patients, and Achstetter et al. [8] reported between 3 % and 7 % in privately insured patients, who comprise around 10 % of insurees in the German health care system. However, these studies focus on specific groups and representative

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https://doi.org/10.1016/j.healthpol.2025.105273
Received 13 August 2024; Received in revised form 21 January 2025; Accepted 17 February 2025
Available online 18 February 2025

studies are lacking. Further, most international studies focus on the broader scope of "unmet medical needs" [4,9] or relate to economic factors [10,11], individual diseases [3], or the COVID-19 pandemic [12]. Studies examining the reasons behind forgone care in the general population are scarce.

The present study therefore focuses on three research questions: 1) How often do German residents forgo health care, 2) who is most affected, and 3) what are the reasons for forgone care.

2. Materials and methods

2.1. Study design

Our study draws on data from three cohorts of the survey by the National Association of Statutory Health Insurance Physicians (Kassenärztliche Bundesvereinigung; KBV), which is an annual population-based survey covering questions on outpatient care [13]. Items on forgone care were assessed in 2016, 2021, and 2022. Each survey targeted the German-speaking population aged 18 and older. The research company Forschungsgruppe Wahlen Telefonfeld GmbH (FGW) conducted a regionally stratified, two-step random sample and participants were interviewed by telephone. The data is weighted, and therefore represents the adult population in Germany regarding sex, age, and formal education. Additionally, regional representativeness is given for the survey in 2016 ($n = 6113$), but not for the smaller surveys (2021 $n = 2043$/2022 $n = 2030$; smaller sample size due to the COVID-19 pandemic). The pooled sample contains 10,186 individuals [13–15] after listwise deletion of missing values. In total, 10,122 individuals (2016 $n = 6066$, 2021 $n = 2033$, 2022 $n = 2023$) were included in the final analyses. The present study is reported following the STROBE statement [16].

2.2. Measures

The primary outcome variable is the forgone care in the last 12 months, measured with a single dichotomous item, queried as follows: "In the last twelve months, have you ever completely skipped a doctor's visit and not made up for it later, even though you thought it was actually necessary?" Participants who answered "yes" were asked about the reasons for the forgone visit. The trained interviewers then assigned the response to one of 17 predefined reasons. For the present analysis, the authors clustered three types of barriers among the 17 predefined reasons which represent relevant dimensions in health care: 1) "systemic barriers" (waiting time for an appointment was too long; didn't get an appointment; no specialist doctor was available), "physical barriers" (the journey to the doctor's office was too difficult; patient was unable to attend due to illness), and 3) "psychological barriers" (fear of the doctor, fear of the diagnosis, COVID-19/fear of infection). All remaining predefined reasons were assigned to the cluster "other" (too expensive/costs; no time; no way to see the doctor; work-related reasons; inconvenience; not necessary anymore; was waiting to see if it would get better; had forgotten; other reasons). Pretests have been done for the filter guidance of the subsamples and an interim evaluation of initial interviews ensured quality assurance. Refusals to state a reason were excluded from further analysis ($n = 39$).

We included the following variables in the analyses: sex/gender (women/men), age (18–44/45–64/≥65 years), educational attainment (low (lower secondary / high (upper secondary education), German citizenship (yes/no), current employment status (full-time/part-time/retirement/other), residential area (rural < 5000/small town 5000 – 99,999/big city ≥ 100,000), region of current residence (East/West Germany), partnership and living situation (no partnership, partnership and living together, partnership but not living together), and medical appointment in the previous 12 months (yes/no).

2.3. Statistical analysis

To investigate research question one (frequency of forgone care) and research question two (who is most affected) pooled and annual data were used. To address research question three (reasons for forgone care), specific reasons were shown univariate based on annual data and identified barriers (i.e. clustered reasons) were investigated using the pooled data. Bivariate comparisons were conducted with chi-square test and corrected applying Rao & Scott's second order. Multiple logistic regression were applied with forgone care as dependent variable both for the pooled data and within individual cohorts. The variables shown in Table 1 were entered sequentially in a stepwise forward approach. Since the magnitude of the odds ratios in our study cannot be compared across models [17,18], we only compare whether the coefficients are positive or negative between the survey years.

To account for confounders, we conducted a multivariate multinomial regression with the reason of forgone care as dependent variable as well as predicted probabilities for easy interpretation. These results are found in the Appendix (Appendix eTab. 2 and eTab. 3) as these findings resemble the results of the descriptive analyses. All statistical analyses were performed with R (Version 4.2.2). Missing values were excluded listwise and significance level was set at 5 %.

3. Results

In total, 10,122 individuals were included in the analyses – stemming from three individual cohorts (2016 $n = 6066$; 2021 $n = 2033$; 2022 $n = 2023$) – with just over half (52 %) being women, and two-thirds (65 %) showing both low education and being in a partnership and living together; roughly 40 % were full-time employed and, likewise, around 40 % lived in a small town. Around 70 % were between 18 and 65 years of age (Table 1.).

Forgone care was reported by 21 % of the pooled sample. While it was 22 % in 2016, the proportion was lower during the pandemic years 2021 and 2022, at 18 %, and 20 %, respectively (Table 1). In the pooled sample, significant differences in forgone care are evident across gender, age, education, employment, partnership and living situation, and doctor's visits. Notably, the most substantial disparities are observed in age and employment. Individuals over 65 and those who are retired have scores that are approximately 10 percentage points lower than those of the comparison groups.

Multiple logistic analyses of the pooled sample (Fig. 1 and Appendix Tab. 1) reveal significant differences in the likelihood of forgoing doctor's visits. The highest likelihood of forgone care is found for women (odds ratio (OR): 1.22; 95 % confidence interval (CI) [1.09; 1.37)] compared to men and for those aged 18 to 44 (OR: 1.19 [1.05; 1.34]) compared to age 45–64, while the lowest odds are presented for those aged 65+ (OR: 0.58 [0.46; 0.73]) and those who reported no medical appointment in the previous twelve months (OR: 0.61 [0.52; 0.71]) compared to participants with an appointment. No significant difference is observed between part-time (OR: 1.06 [0.91; 1.25]) and full-time employment. However, retirees (OR: 0.75 [0.59; 0.95]) were less likely to forgo doctor's visits compared to full-time workers. Compared to respondents without a partnership, respondents living with partners are less likely to forgo doctor's visits (OR: 0.77 [0.69; 0.87]), while respondents not living with their partners do not differ from the reference category (OR: 0.97 [0.77; 1.22]).

The logistic regression analysis of individual annual samples shows deviations. While in 2016 there are significant differences between gender, age, education, employment, and partnership and living situation, none of these associations is significant in 2021 and 2022. However, there are significant differences with living environment in 2021, whilst there are none in 2016 and 2022. The association between doctor's visit and forgone care is significant in every survey year and shows the same trend: respondents without any doctor's visit in the past 12 months were less likely to forgo care.

Table 1
Descriptive characteristics and forgone care for the pooled sample and individual cohorts.

Characteristics	Pooled			2016			2021			2022		
	Forgone Care 2143 (21 %)	Overall N = 10,122 (100 %)	p-value[1]	Forgone Care 1356 (22 %)	Overall N = 6066 (60 %)	p-value[1]	Forgone Care 376 (18 %)	Overall N = 2033 (20 %)	p-value[1]	Forgone Care 411 (20 %)	Overall N = 2023 (20 %)	p-value[1]
Gender			0.001			0.022			0.010			0.6
men	935 (19 %)	4821		593 (21 %)	2867		149 (15 %)	973		193 (20 %)	981	
women	1208 (23 %)	5301		763 (24 %)	3199		227 (21 %)	1060		218 (21 %)	1042	
Age			<0.001			<0.001			0.2			<0.001
18–44	940 (26 %)	3597		632 (29 %)	2157		154 (21 %)	735		154 (22 %)	704	
45–64	849 (23 %)	3723		538 (24 %)	2233		130 (18 %)	731		181 (24 %)	759	
65+	354 (13 %)	2802		186 (11 %)	1676		92 (16 %)	566		76 (14 %)	560	
Education			<0.001			<0.001			0.8			0.3
low	1323 (20 %)	6638		842 (21 %)	4094		232 (18 %)	1268		249 (19 %)	1276	
high	804 (24 %)	3343		510 (27 %)	1910		137 (19 %)	721		157 (22 %)	711	
Employment			<0.001			<0.001			0.080			0.004
full-time	981 (24 %)	4074		641 (27 %)	2416		138 (18 %)	788		202 (23 %)	871	
part-time	367 (28 %)	1336		223 (28 %)	784		75 (26 %)	286		70 (26 %)	266	
retirement	424 (14 %)	3122		227 (12 %)	1882		105 (17 %)	619		92 (15 %)	621	
other	337 (24 %)	1425		240 (27 %)	888		53 (17 %)	304		45 (19 %)	233	
Citizenship			0.5			>0.9			0.3			0.9
German	2041 (21 %)	9585		1292 (22 %)	5773		362 (19 %)	1919		387 (20 %)	1893	
other	101 (20 %)	512		63 (22 %)	284		13 (13 %)	107		24 (20 %)	121	
Region, n (%)			>0.9			0.6			0.2			0.6
West Germany[2]	1752 (21 %)	8287		1106 (22 %)	4978		317 (19 %)	1658		330 (20 %)	1651	
East Germany[3]	390 (21 %)	1835		250 (23 %)	1088		59 (16 %)	375		81 (22 %)	371	
Living environment			0.10			0.14			0.2			0.5
rural (<5000)	588 (21 %)	2783		367 (21 %)	1726		111 (21 %)	525		110 (21 %)	532	
small town (5000–99,999)	843 (20 %)	4197		552 (22 %)	2534		130 (16 %)	826		161 (19 %)	838	
Big city (>100,000)	537 (23 %)	2338		335 (25 %)	1353		88 (18 %)	483		114 (23 %)	502	
Partnership & living situation			0.024			0.039			0.7			0.3
no partnership	714 (23 %)	3134		443 (24 %)	1848		123 (20 %)	614		148 (22 %)	673	
partnership, living together	1291 (20 %)	6401		831 (21 %)	3915		233 (18 %)	1284		226 (19 %)	1202	
partnership, not living together	130 (24 %)	538		77 (27 %)	281		20 (17 %)	120		33 (24 %)	137	
Medical appointment			<0.001			<0.001			0.13			0.024
yes	1886 (22 %)	8493		1206 (23 %)	5168		315 (19 %)	1619		365 (21 %)	1706	
no	257 (16 %)	1624		150 (17 %)	897		61 (15 %)	412		46 (14 %)	316	

Note: Values are presented in frequency (N) and percentage (%).
[1] Chi-squared test with Rao & Scott's second-order correction.
[2] Including Berlin West.
[3] Including Berlin East.

The stated reasons are depicted in Fig. 2. by cohort. Overall, the top three mentioned reasons were "didn't get appointment", "COVID-19/fear of infection", and "waiting time was too long"; however, they differ greatly between pre-pandemic and pandemic years (Fig. 2). In 2016, the most frequently stated reason was "didn't get an appointment" (32 %), whereas it was "COVID-19/fear of infection" during the pandemic (2021: 44 % and 2022: 22 %). Further, the reasons "not necessary any more" and "was waiting to see if it would get better" were mentioned more often in the year 2016 (11 % and 12 %), while in the years 2021 and 2022, these reasons were mentioned less than 5 % of the time. The reason "waiting time was too long" was mentioned almost twice as often before (14 %) than during the pandemic (7 % and 9 %).

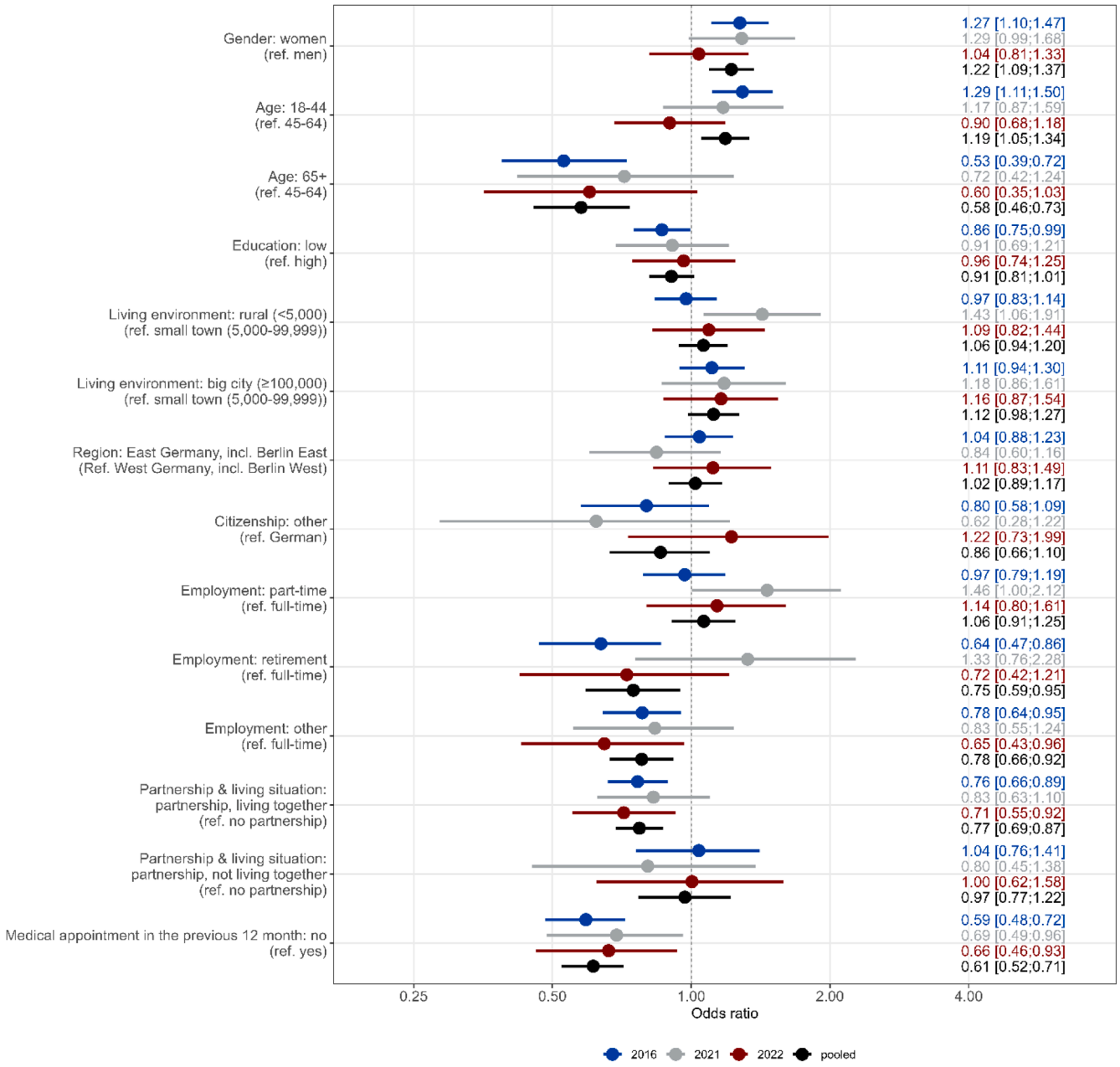

Fig. 1. Logistic regression: Forgone care by cohort and pooled
Odds ratio; 95 % Confidence Interval; Dependent variable: foregone care: "In the last twelve months, have you ever completely skipped a doctor's visit and not made up for it later, even though you thought it was actually necessary? Nagelkerke's R^2: 2016: 0.069, 2021: 0.032, 2022: 0.036, Pooled: 0.045.

About 61 % of the reported reasons to forgo a doctor's visit can be clustered into three barrier types: systemic (39 %), psychological (15 %), and physical barriers (6 %). Other reasons (39 %) were of a highly individual nature and could not be summarized into further categories. A bivariate examination (Table 2) of the clustered reasons for forgoing a doctor's visit reveals significant associations with age, type of employment, and a medical appointment in the previous 12 months. As observed in the logistic regression analyses, respondents aged 65+, as well as retirees, differ considerably. Systemic barriers were reported most often by part- and full-time members of the workforce (64 % and 45 %) and those aged 18–44 (46 %), and were reported least by participants aged 65+ (19 %) and retirees (19 %). While psychological barriers were reported most frequently by those with no medical appointment in the last 12 months (24 %), followed by retirees (23 %), they were mentioned least by participants with no German citizenship (10 %) and participants aged 18–44 (11 %). Physical barriers, in contrast, were most often reported by retirees (10 %) and participants aged 65+ (9 %), whereas participants in other forms of employment (2 %) and part-time workers (3 %) reported physical barriers least. Multivariate multinomial regression analyses and predicted probabilities confirm bivariate results and can be found in the Appendix (see eTab. 2 and eTab. 3).

4. Discussion

With our study, we examined the prevalence of forgone care in three cohorts (2016, 2021, and 2022), analyzed who is most and least affected, and examined the reported reasons for forgone care.

Overall, the rate of forgone care found in our data (21 % of 10,122 individuals) is higher than the rate found in other studies, including a

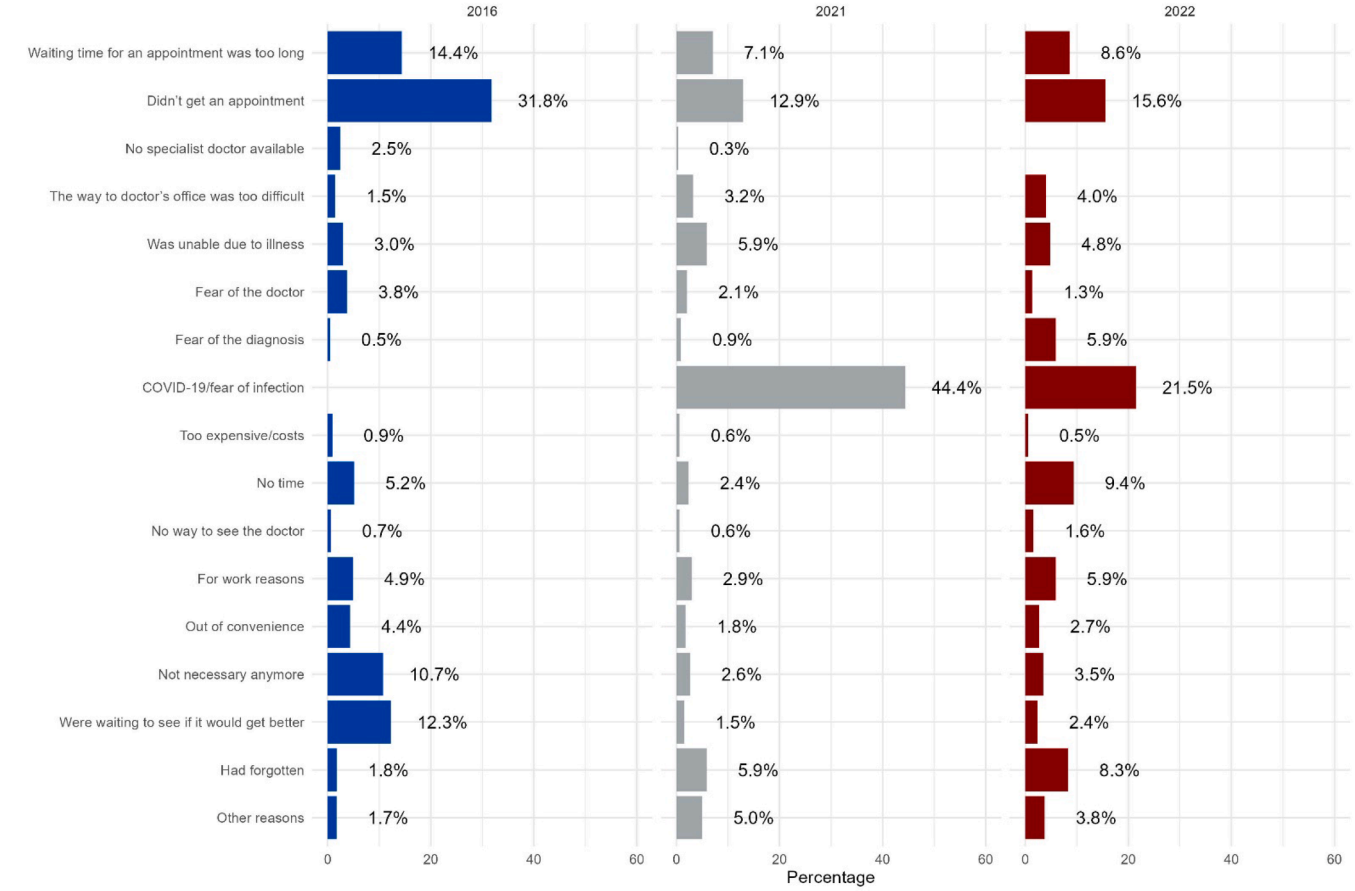

Fig. 2. Reasons for forgone care by cohort

Note: Stated reasons are categorizied in three barriers and "other": systemic barriers (waiting time for an appointment was too long, didn't get an appointment, no specialist doctor available), physical barriers (the way to doctor's office was too difficult, was unable to attend due to illness), psychologial barriers (fear of the doctor, COVID-19, fear of infection), other (too expensive/costs, no time, no way to see the doctor, work reasons, inconvenience, not necessary any more, was waiting to see if it would get better, had forgotten, other reasons.

German sample with forgone care rates between 3 % and 14 % [7,8,10]. An explanation for this finding might be that in our study a representative sample of the German population (aged 18 and older) was used, while in other studies patients with chronic diseases [7], residents with private health insurance [8], and older adults [10] were included. It seems reasonable to assume that those specific groups report less forgone care due to a greater general utilization of health care (patients with chronic diseases), fewer systemic barriers (patients with private health insurance), and easier time allocation for medical appointments (older adults). This explanation is supported by our findings, where we observed a lower rate of forgone care in the 65+ age group.

In our analyses that include bi- and multivariate analyses, we found that women, younger adults, and members of the workforce face higher chances of forgone care, while older adults, retirees, participants who had no medical appointment in the previous 12 months, and those living with a partner are less likely to forgo care. The higher odds found in women may be explained by the well-known higher need and health care utilization of women and that they forgo more often due to costs [7, 19] and possible care work. However, costs are very low in Germany due to universal health coverage, and only a small fraction of respondents in our data mentioned costs as a barrier. The increased likelihood of forgoing care among the youngest age group may be affected by a general perception that their medical needs are not that urgent. Further, time resources might be sparse due to employment and the potential responsibility of caring for young children. The higher forgone care rates of part-time and full-time employees could also be due to time shortages caused by the double and multiple burdens of working and caring for children and/or other family members (e.g. parents). The findings for retirees and older adults facing less forgone care may be correlated, since the oldest age group (65+) is not only more likely to be in need of broader medical care, but also more likely to be retired due to the mean retirement age of slightly above 64 years during the period of our surveys [20]. The lower odds of forgoing a doctor's visit for those without any medical appointment in the previous 12 months may in part be related to a lesser need for medical care. This assumption is strengthened by Röttger et al. [7], who stated that people with poor health and a perceived high need for health care may have more possibilities of forgoing care. Further, we found a significant difference in partnership and living situation, with cohabiting seeming to be a protective factor against forgone care. Other studies have revealed the positive correlation between partnership, living conditions and people's health [21,22] and, moreover, between partnership and low rates of forgone health care [19].

By looking at associations of forgone care in the different years, we found some differences between 2016 and the pandemic years. While there are significant associations in 2016 between age, gender, education, employment, and partnership and living situation, none of these exist during the pandemic years 2021 and 2022. One explanation might be that restrictions like lockdowns, fear of infection and other conditions which affected the general population during the pandemic overshadowed and mitigated differences due to social determinants (social gradient). However, these assumptions seem to contradict other studies showing that the social gradient further exists or actually increased during and after the COVID-19 pandemic [23].

Table 2
Reported barriers to forgone care.

Characteristic	Systemic Barriers N = 845 (39.4 %)	Psychological Barriers N = 313 (15.5 %)	Physical Barriers N = 124 (5.9 %)	Other N = 820 (38.7 %)	Overall N = 2103	p-value[3]
Gender						0.2
men	382 (41.8 %)	124 (13.6 %)	43 (4.7 %)	365 (39.9 %)	914	
women	463 (38.9 %)	189 (15.9 %)	82 (6.9 %)	455 (38.3 %)	1189	
Age						<0.001
18–44	427 (46.3 %)	101 (11.0 %)	47 (5.1 %)	347 (37.6 %)	922	
45–64	351 (42.0 %)	133 (16.0 %)	46 (5.6 %)	305 (36.5 %)	835	
65+	67 (19.4 %)	78 (22.7 %)	31 (9.1 %)	168 (48.8 %)	345	
Education						0.093
low	500 (38.7 %)	178 (13.8 %)	88 (6.8 %)	526 (40.7 %)	1292	
high	345 (43.3 %)	125 (15.7 %)	37 (4.6 %)	290 (36.4 %)	796	
Employment						<0.001
full-time	436 (45.2 %)	116 (12.0 %)	67 (7.0 %)	346 (35.8 %)	965	
part-time	169 (46.4 %)	50 (13.8 %)	9 (2.5 %)	136 (37.3 %)	365	
retirement	82 (19.9 %)	94 (22.8 %)	41 (10.0 %)	195 (47.3 %)	411	
other	146 (44.4 %)	48 (14.5 %)	7 (2.2 %)	128 (38.9 %)	329	
Citizenship						0.6
German	807 (40.3 %)	303 (15.1 %)	118 (5.9 %)	774 (38.7 %)	2001	
other	38 (37.7 %)	10 (9.7 %)	7 (6.6 %)	46 (46.0 %)	101	
Region						0.2
West Germany[1]	668 (38.8 %)	265 (15.4 %)	102 (5.9 %)	684 (39.8 %)	1719	
East Germany[2]	177 (46.2 %)	48 (12.5 %)	23 (5.9 %)	136 (35.5 %)	384	
Living environment						0.2
rural (<5000)	265 (45.6 %)	75 (13.0 %)	25 (4.3 %)	216 (37.1 %)	581	
small town (5000–99,999)	312 (37.9 %)	121 (14.7 %)	49 (6.0 %)	341 (41.4 %)	822	
big city (>100,000)	208 (39.3 %)	81 (15.4 %)	39 (7.4 %)	201 (37.9 %)	529	
Partnership & living situation						0.7
no partnership	254 (36.8 %)	106 (15.3 %)	45 (6.5 %)	286 (41.4 %)	691	
partnership, living together	541 (42.3 %)	184 (14.4 %)	71 (5.5 %)	481 (37.7 %)	1278	
partnership, not living together	49 (38.3 %)	20 (15.7 %)	9 (6.8 %)	50 (39.2 %)	127	
Medical appointments						0.011
yes	748 (40.3 %)	254 (13.7 %)	115 (6.2 %)	739 (39.8 %)	1855	
no	97 (39.2 %)	59 (23.9 %)	10 (3.9 %)	82 (33.0 %)	248	

Note: Values are presented in frequency (n) and percentage (%).
[1] Including Berlin West.
[2] Including Berlin East.
[3] Chi-squared test with Rao & Scott's second-order correction.

Our second analysis focused on the reasons for forgoing care and identified three main types of barriers: systemic, psychological, and physical. Upon closer examination of the three cohorts, we found that in 2016, the most commonly reported reason for forgoing care was "didn't get an appointment". However, in 2021 and 2022, the predominant reason shifted to "COVID-19/fear of infection". Notably, in 2021, nearly half of the missed doctor's visits were attributed to this reason, highlighting the significant fear of the novel virus at that time. This fear persisted despite the implementation of protective measures during medical appointments and the perceived need for care. These findings further indicate the need to expand telemedicine options, both to address systemic barriers and to support adaptation to potential future pandemics."

Systemic barriers, such as difficulties in securing an appointment or long waiting times, were more frequently reported by younger (18–44 years) and middle-aged participants (45–64 years) and working individuals, whereas older participants and retirees reported these barriers less often. This disparity may be attributed to the challenge of scheduling medical appointments during working hours. Implementing easily accessible appointment scheduling systems, offering appointment hours in the evenings or on weekends, and utilizing telemedicine could potentially address these issues. Notably, participants from East Germany reported systemic barriers more frequently than those from West Germany, likely due to persistent health care disparities, with East Germany experiencing poorer health care coverage [24,25]. Psychological barriers, including fear of the diagnosis or the doctor, were most often reported by the oldest age group (65+) and retirees and those who had no medical appointment in the previous 12 months. Röttger et al. found a high association between forgone care and perceived discrimination and depression [7]; however, further studies are required to investigate psychological barriers in more detail in order to assess the magnitude of stigmatization and discrimination alongside other reasons. Physical barriers were mostly reported by participants aged 65+ and retirees, highlighting the need for accessible doctor's offices and better transportation services. Frail or disabled individuals particularly need barrier-free access, which is still inadequate in Germany. Health policy efforts, such as guidelines by the National Association of Statutory Health Insurance Physicians, aim to improve barrier-free accessibility in health care [26].

4.1. Policy implications

The practical implications of this study on forgone doctor's visits in Germany highlight several key areas for policy and intervention. Targeted interventions for vulnerable groups are crucial. Women and younger adults, who are more likely to skip doctor's visits, need targeted health education and outreach programs, flexible modes of appointment scheduling, and mobile health services. Older individuals, although less likely to skip visits, face significant barriers that can be addressed by enhancing home-based care and providing mental health support. Improving accessibility to doctors' offices is crucial for people with limited mobility, including those with physical disabilities and obesity. They often face barriers like narrow doors and unsuitable toilet seats within practices. Additionally, people with visual or hearing impairments encounter obstacles to care. Reducing these barriers is essential to ensure everyone has free access to health care. Long waiting times and difficulties securing appointments can be mitigated by improving online booking systems, increasing telemedicine availability, and expanding

clinic hours. Ensuring equitable distribution of health care services, especially in rural areas, by incentivizing health care professionals to practice in underserved regions is also important. Enhancing health care awareness and education is another key area. Increasing public health literacy through educational campaigns about the importance of regular check-ups and addressing psychological barriers, such as the stigma around mental health, through community programs and patient support groups is necessary. Policy and structural changes are required as well. Maintaining low co-payments and ensuring comprehensive mental health service coverage in Germany's health insurance system is crucial. Better integration of primary care with mental health services can provide a holistic approach to patient care, reducing psychological barriers. Support for specific employment groups is also necessary. Encouraging employers to provide health days, flexible working hours, and on-site health services can reduce work-related barriers to accessing health care. Addressing these areas can help health care policymakers and providers reduce the rates of forgone care, improving overall public health and lowering long-term health care costs due to untreated conditions.

4.2. Limitations

Our study has several limitations. First, although telephone-based interviews were used, fewer participants could be included during the pandemic years due to restrictions affecting the interviewers and changing priorities. Additionally, although the sample was weighted for sex, age, and education, it does not include official numbers for the German-speaking population aged 18 and older from other nationalities, resulting in some inexactness. Regarding the categorization of reasons for forgone care, the "other" category included a substantial number of responses we could not cluster in a relevant health care category. Thus, in addition to the description of the categorized barriers, we described the specific responses. Further, the standardized, quantitative nature of the surveys did not allow for deeper insights into the reasons for forgone care, e.g. if caregiving or overwhelming workloads are the background for "no time to go to a doctor". Further research is needed to better understand the reasons for forgone care in order to empower affected individuals and overcome systemic barriers. To address these, detailed studies should explore their underlying causes. A mixed-methods approach, such as follow-up interviews based on survey data or an extension of this study, could provide deeper insights into these issues. While we accounted for age and employment type as separate variables, there is significant overlap between the oldest age group (65+) and retirees. Multicollinearity tests were favorable, allowing separate interpretation of these categories. However, caution should be exercised when drawing conclusions from these overlapping groups.

5. Conclusion

Our study revealed substantial rates of avoidable forgone care among the general population in Germany, driven by both individual and structural barriers. Higher odds for forgone care are reported for women and younger adults with systemic barriers most often reported by younger adults and members of the workforce and physical and psychological barriers most often by older adults (65+) and retirees. Key recommendations include increasing the accessibility of doctor's offices, optimizing appointment scheduling, expanding telemedicine services, and offering flexible hours to accommodate workers and caregivers. By addressing these barriers, policymakers and healthcare providers can contribute to equitable access to care and improve overall health outcomes across the population.

Data availability

Data used for these analyses is available upon reasonable request.

Ethical statement

All the analyses described were conducted in accordance with the Declaration of Helsinki. According to the local ethics committee of the Medical Faculty Charité – Universitätsmedizin Berlin, nonexperimental fully anonymized data does not require ethical approval under national guidelines (2016/679 EU General Data Protection Regulation and Amtsblatt 230/2019, §2 Abs. 1. 2019). The KBV's Commissioner for Data Protection confirmed that all data protection standards have been met.

Funding

Open Access funding was enabled and organized by Project DEAL. The present work is part of the research consortium 'NAVICARE – Patient-oriented health services research'. NAVICARE is funded by the German Federal Ministry of Education and Research (01GY1911).

CRediT authorship contribution statement

Christine Haeger: Writing – review & editing, Writing – original draft, Visualization, Validation, Methodology, Investigation. **Raphael Kohl:** Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Methodology, Formal analysis, Data curation, Conceptualization. **Julie L. O'Sullivan:** Writing – review & editing, Supervision, Methodology. **Susanne Schnitzer:** Writing – review & editing, Writing – original draft, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Data curation, Conceptualization.

Declaration of competing interest

The authors declare no conflicts of interest.

Acknowledgements

We acknowledge support from Fabian Engelmann from the National Association of Statutory Health Insurance Physicians (Kassenärztliche Bundesvereinigung). We thank Hillary Crowe for English language editing and proofreading.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.healthpol.2025.105273.

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