

BMJ Open Disability, poverty and health-service accessibility in the context of the COVID-19 pandemic: a population-based repeated cross-sectional study in Colombia

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To cite: Espitia Segura OM, Pinilla-Roncancio M. Disability, poverty and health-service accessibility in the context of the COVID-19 pandemic: a population-based repeated cross-sectional study in Colombia. *BMJ Open* 2024;**14**:e088605. doi:10.1136/bmjopen-2024-088605

► Prepublication history and additional supplemental material for this paper are available online. To view these files, please visit the journal online (<https://doi.org/10.1136/bmjopen-2024-088605>).

Received 10 May 2024
Accepted 04 October 2024



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ABSTRACT

Objectives In Colombia, 4.3% of the population 5 years or older lives with a disability. They face higher levels of poverty and social exclusion compared with persons without disabilities. This article aims to understand the factors associated with access to preventative and curative health services for people with disabilities in Colombia. Additionally, it explores whether access to health services for people with disabilities changed during the COVID-19 pandemic.

Design This is a population-based repeated cross-sectional study.

Setting This study took place in Colombia, from 2018 to 2021.

Data sources and participants National Quality of Life Survey datasets in Colombia from 2018 to 2021, including people 5 years or older, were reviewed. People were classified into three groups: person with any disability, person with multiple disabilities and person without disabilities.

Primary and secondary outcome measures A multinomial regression model was used to calculate the probability of access to preventative services during the previous year in four categories: general practitioner (GP) and dentist, GP only, dentist only and no consultation. A logistic model for curative consultations with and without hospitalisation in people who reported having a health problem.

Results People with disabilities demanded more preventative health services, except for dental services, compared with people without disabilities. Similarly, they experienced more health problems and demanded more curative services than people without disabilities, except during the year 2020, when no significant differences were found between people with and without disabilities. For people with disabilities, poverty was not associated with a lower likelihood of consultation, except for preventative dental consultations, which were significantly lower for poor people with disabilities. In addition, the subsidised insurance regimen was identified as an important variable in the utilisation of healthcare in Colombia.

Conclusion People with disabilities in Colombia demand more health services compared with people without disabilities. Despite being in a worse condition according to various socioeconomic indicators, few factors affect

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ This study provides an up-to-date analysis of the probability of access to healthcare of people with disabilities in Colombia.
- ⇒ It analyses a consistent question over time, using a pooling technique to infer differences across various periods, enabling the identification of changes in the probability of access to health services during the COVID-19 pandemic.
- ⇒ Disability questions do not fully align with international standards, potentially inflating prevalence estimates.
- ⇒ Variables, such as preventative consultations, were unavailable throughout the whole study period; therefore, it was not possible to analyse this variable in 2020 or 2021.

their demand for healthcare services. The COVID-19 pandemic was associated with a significant reduction in the probability of access to outpatient treatment services during 2020 for people with disabilities. Longitudinal studies and comparison with other Latin American countries are recommended.

INTRODUCTION

More than 85 million people with disabilities live in Latin America and the Caribbean (LAC).¹ In Colombia, according to the National Population Census, approximately 1.76 million people live with disabilities.² People with disabilities face social exclusion in accessing education and employment, and they also face a higher risk of monetary and multidimensional poverty³ exacerbated by the costs associated with disabilities.⁴⁻⁶

People with disabilities have greater needs for healthcare,⁷ disease prevention⁸ and sexual and reproductive healthcare services,⁹ and they also have increased demands for specific care to address their disability.¹⁰ Many of these health needs are unmet, due

to a variety of barriers related to direct and indirect costs (7), the availability of health services,⁸ travel difficulties¹¹ and the potential inefficiency of healthcare systems. Specifically in preventative care, people with disabilities face barriers against their access to services such as vaccination, cervical cytology and breast examinations, barriers that are higher for people with severe or multiple disabilities.¹²

In Colombia, under the framework of Law 100 of 1993, two main health-system insurance regimens were established: the subsidised regimen, whose main objective is to enrol individuals with no capacity to pay for health services; and the contributory regimen, which covers individuals who work in the formal labour market or who have the capacity to contribute to the healthcare system.¹³ Despite significant improvements in healthcare coverage over the last 20 years official data record that, as of 2020, 7% of men with disabilities and 5% of women with disabilities were not enrolled in a health-insurance scheme.¹⁴ In addition, people with disabilities are predominantly enrolled in the subsidised regimen (73% in 2015), an aspect associated with the low participation of people with disabilities in the labour market and a lower capacity to contribute to the social security system.¹⁵ Additionally, people with disabilities are more likely to be unemployed or outside the labour force: indeed, only 27.6% of working-age people with disabilities engage in paid activities in Colombia.¹⁶

In Colombia, the evidence regarding access to healthcare reveals that, although there is a high rate of insurance coverage, access to comprehensive and timely health services is not guaranteed.¹⁷ Access is known to be multifactorial and related to multiple barriers; however, information in Colombia is limited, still it has been found that better outcomes in health access are present in more prosperous regions of the country, including urban settings, also most people with disabilities are affiliated with the subsidised regimen, which is found to be of lower quality and to offer poorer access, compared with the contributory regimen.¹⁸

The COVID-19 pandemic created conditions for higher barriers to healthcare services for people with and without disabilities, by increasing waiting times and necessitating the temporary closure of facilities.¹⁹ Although it is expected that people with disabilities faced a higher number of barriers,⁷ no evidence exists to confirm the extent to which demand for health services changed among people with disabilities during the COVID-19 pandemic, which factors influenced their usage of preventative and curative healthcare services or whether the numbers and types of barriers faced by people with disabilities are different from those confronting people without disabilities.

The purpose of this study is to analyse first whether people with disabilities have a higher or lower demand for health services in Colombia, to understand the factors associated with access to preventative and curative health services for people with disabilities in the country by

investigating the relationship between disability and personal, social and contextual characteristics. Additionally, this study aimed to assess whether the demand for healthcare changed as a result of the COVID-19 pandemic for people with disabilities in comparison with people without disabilities in 2020 and 2021, and in comparison, with previous years.

METHODOLOGY

Study design

Repeated cross-sectional analytical study used secondary data from the National Quality of Life Survey (QoLS) from 2018 to 2021 in Colombia. These years were selected because a comparable set of disability questions was used from 2018, following the recommendations made by the Washington Group on Disability Statistics (WG).

Data

The QoLS is representative at various levels: national, rural/urban and provincial. It includes information for the 32 provinces of the country and for rural and urban areas (except Bogotá and San Andrés, which are exclusively urban). It uses a probabilistic multistage sampling frame. Information for this survey is collected in face-to-face interviews with non-institutionalised civilian populations. The information is unique because interviews were conducted face-to-face, even during the pandemic. The survey consists of 11 modules, covering household characteristics with variables related to housing, education, employment and health for all household members. Data were accessed from a public website from the National Administrative Department of Statistics (DANE) Colombia (<https://microdatos.dane.gov.co/index.php/catalog/POBCONVID>), downloaded directly in Stata format. Thus, no tabulation or further data preparation was necessary other than merging datasets. Data were analysed initially by the first author and thoroughly validated by both authors.

Definition of disability

The QoLS asked about the presence of functional difficulties in eight domains, [starting from the 2018 census, the DANE in Colombia added two additional functional domains to the list: grabbing or moving objects by hand; and relating or interacting with other people], with four severity levels. For this study, a person with a disability was defined as someone with at least one limitation in one of the eight domains at severity levels '1. Cannot do it' or '2. Yes, with a lot of difficulty'. In addition, two variables were generated: the first classifies individuals with at least one limitation as a person with disabilities. The second variable creates three groups: (1) people without functional difficulties; (2) individuals reporting a severe functional difficulty in only one domain; and (3) individuals with multiple disabilities, who report severe functional difficulties in more than one domain. This variable was included because it is expected that the burden of disability and

the health-condition profile change with multiple functional difficulties.^{20 21} Only individuals 5 years or older were included, given the recommendations for the use of the WG short set of questions.

Dependent variables

Consultation for preventative treatment

This variable was created using information provided by two questions: for preventative rather than curative reasons, do you consult (a) a general practitioner (GP) and (b) a dentist at least once a year? These variables were combined into one, generating a variable of four outcomes: consultation with GP and a dentist, consultation with a GP only, consultation with a dentist only and no consultation in the previous year.

Additionally, specific barriers reported by those who did not attend a consultation were studied; they included lack of money, transportation difficulties, distance to the health centre and long waiting lists for appointments. Unfortunately, questions on this topic were not included after 2019. Thus, it was not possible to analyse replies to this question during 2020 and 2021.

Consultation for curative treatment

Two types of service were analysed in this section: in-patient treatment (self-reporting health events that required staying overnight in a hospital in the last 12 months) and out-patient treatment for individuals who reported having had a health problem in the last 30 days.

Control variables

Control variables included personal characteristics such as age, sex, health condition and chronic diseases; socio-economic variables such as educational level (categorised by the highest educational level achieved), occupation, place of residence (province, urban or rural area), monetary poverty status and health-insurance regimen. Occupation-related indicators were computed only for individuals aged 15 years or older.

Empirical strategy

Two different empirical strategies were used, depending on the outcome variable. A multivariate analysis was conducted to examine how socioeconomic, health and individual characteristics were associated with the demand for health services by people with disabilities from 2018 to 2021. A pooled regression analysis was performed which efficiently detects the dynamics of changes in the outcome of interest and increases the sample size to improve the precision of point estimates.²²

Consultation for preventative treatment

For preventative consultations, a multinomial logistic regression model was used, due to the nature of the categorical dependent variable with four non-ordinal outcomes. The described independent variables were initially included in a simple model and subsequently in a multivariate model. Variables were included based on their theoretical relevance and based on previous

studies,¹¹ the relevance for Colombia (health insurance). The model was selected based on the Akaike Information Criteria. In the multinomial model, the estimated coefficients are presented as relative risk ratios (RRR), comparing them with a baseline category, which in this case is 'no consultation'.

Consultation for curative treatment

In curative treatment, outcomes were binary; therefore, two independent logistic models were estimated. The first aimed to identify variables associated with outpatient consultation. In this model, only people who reported a health problem in the last 30 days were included, and the dependent variable was consulting a healthcare provider compared with not consulting. Similarly, a model was estimated for hospitalisation, where the dependent variable was a dichotomous variable, where one represents hospitalisation in the previous 12 months and zero otherwise. Variables were selected with the same principles described for preventative consultation. All calculations were performed using robust SE. ORs were reported in logistic models to reflect the strength of the association between the study factor and the outcome. Finally, year variables were included to take account of the time. In 2020, this variable was associated with the potential effect of the COVID-19 pandemic on access to healthcare services, and an interaction term was included to assess whether having or not having a disability was associated with each outcome differently per year.

A comprehensive assumption evaluation was conducted, including fit and collinearity assessments. As a sensitivity analysis, each model was additionally applied separately for each subgroup of interest (no disability, with disability and with multiple disabilities). All descriptive analyses are weighted based on the survey's expansion factors, considering the stratified nature of the sample framework. However, expansion factors were not used in multivariate analyses, because using sample weights in modelling associations between explanatory and dependent variables could substantially increase the variance of the model estimates.²³

RESULTS

Disability prevalence

In 2021, 2872882 people aged five and older (6.04 per cent) lived with some type of disability in Colombia, and 1.91% of the population (906464 people) reported more than one functional difficulty (multiple disabilities). In the same year, 3.27%, or 1553087 people, lived with a severe sight-related disability, which was the most frequent functional difficulty, followed by the physical difficulties (walking or climbing stairs), with 2.07% of the population aged 5 years or older reporting a severe functional difficulty in this respect.

Table 1 summarises the characteristics of people with disabilities per year. Compared with people without disabilities, people with disabilities are on average 18.6

Table 1 Descriptive statistics of people 5 years or older with and without disability by year 2018–2021

	2018			2019		
	With disability	Multiple disability	No disability	With disability	Multiple disability	No disability
n	3,434,696 7.49% (.092)	908,352 1.98% (.046)	42 409 145	3,543,227 7.7% (.104)	874,137 1.90% (.050)	42 454 725
Age, average	52.4 (.304)	58.2 (.615)	33.1 (.071)	51.5 (.304)	59.26 (.590)	34.3 (.075)
Sex %						
Woman	55.88 (.630)	53.11 (1.18)	50.36 (.193)	55.78 (.70)	54.32 (1.32)	50.95 (.197)
Residence area %						
Urban	79.99 (.339)	78.64 (.665)	77.04 (.112)	80.94 (.380)	77.67 (.824)	75.88 (.127)
Health insurance %						
Yes	95.57 (.298)	97.24 (.327)	93.53 (.099)	93.96 (.394)	96.42 (.716)	92.9 (.106)
Type of insurance %						
Contributory regimen	43.26 (.662)	39.41 (1.24)	46.13 (.204)	46.71 (.727)	39.63 (1.36)	46.6 (.208)
Chronic disease %						
Yes	49.19 (.634)	66.25 (1.10)	12.71 (.125)	46.75 (.699)	67.54 (1.20)	14.77 (.146)
Poverty %						
Poor	38.86 (.598)	43.55 (1.14)	39.79 (.179)	37.5 (.651)	46.29 (1.30)	39.67 (.184)
Standard errors in parentheses						
n	2,647,097 5.65% (.082)	806,242 1.72% (.047)	44 210 214	2,872,882 6.04% (.090)	906,464 1.91% (.050)	4,466,3871
Age, average	53.7 (.346)	58.06 (.702)	34.6 (.072)	53.9 (.353)	59.07 (.656)	34.8 (.075)
Sex %						
Woman	54.58 (.741)	52.6 (1.38)	51.09 (.188)	54.88 (.761)	53.22 (1.33)	51.22 (.194)
Residence area %						
Urban	78.4 (.429)	77.11 (.819)	76.44 (.113)	79.52 (.413)	79.35 (.721)	76.61 (.116)
Health insurance %						
Yes	95.44 (.338)	95.9 (.591)	93.19 (.103)	96.26 (.296)	97.82 (.295)	92.99 (.105)
Type of insurance %						
Contributory regimen	40.2 (.787)	36.36 (1.47)	43.87 (.200)	42.44 (.805)	35.22 (1.39)	45.19 (.297)
Chronic disease %						
Yes	52.78 (.742)	68.22 (1.31)	13.5 (.133)	54.75 (.761)	71.3 (1.67)	14 (.141)
Poverty %						
Poor	41.9 (.711)	45.75 (1.35)	42.2 (.179)	41.85 (.731)	49.01 (1.33)	42.91 (.186)

An extended version of this table can be found in online supplemental table 1 HIE, Health Insurance Entity.

years older (95% CI 18.2 to 18.9), compared with people without disabilities (52.8 vs 34.2 years); and they have a 36.8 percentage points (pp) (95% CI 36.0 to 37.5) higher prevalence of self-reported chronic diseases (50.5 vs 13.7%). Additionally, their labour-market participation is 23.5 pp lower (95% CI 22.8 to 24.2) (28.6 vs 52.1%), and a larger percentage of people with disabilities have a primary school or lower educational level, compared with the educational level attained by people without disabilities on average. Finally, no significant differences were found in the levels of income poverty between people with and without disabilities (42 vs 43%; *p* values 0.161). However, when analysing differences between domains of functional difficulties, it was found that, except for people with a visual limitation, people with disability have

significantly higher levels of income poverty compared with people without disabilities in all years.

DEMAND FOR HEALTH SERVICES Consultation for preventative treatment

When analysing people's demand for health services while not feeling sick, the results revealed that living with a disability was associated with a lower probability of having a dentistry consultation. No significant differences were found between people with and without disabilities when analysing access to both GP and dentist, to GP only or to dentist only, in 2019. However, people with disabilities do seek GP-only consultations significantly more than people without disabilities (21.7 vs 12.7%) (table 2).

Table 2 Bivariate analysis: consultation while not feeling sick demand for both services (general practitioner (GP) and dentist).

	2018			2019		
	PwD	PwDm	PwoD	PwD	PwDm	PwoD
Consult GP and dentist	1 663 525	421 494	21 377 774	1 893 847	429 149	22 653 324
% (SE)	48.4 (.636)	46.4 (1.19)	50.4 (.192)	53.5 (.694)	49.1 (1.32)	53.4 (.195)
Man	43.9 (.956)	46.1 (1.79)	44.9 (.277)	46.8 (1.08)	46.1 (1.97)	47.0 (.283)
Woman	52.0 (.848)	46.7 (1.59)	55.8 (.265)	58.8 (.886)	51.6 (1.77)	59.5 (.265)
Rural	34.4 (.690)	31.9 (1.26)	37.8 (.197)	34.5 (.848)	32.5 (1.66)	37.8 (.234)
Urban	52.0 (.771)	50.5 (1.46)	54.3 (.242)	57.9 (821)	53.9 (1.61)	58.3 (.243)
Subsidised regimen	40.2 (.752)	38.1 (1.38)	43.7 (.222)	44.4 (.868)	41.9 (1.57)	45.4 (.237)
Contributory regimen	61.0 (1.08)	58.7 (2.12)	62.5 (.329)	66.8 (1.11)	61.0 (2.31)	67.7 (.318)
Chronic disease=Yes	48.8 (.894)	46.8 (1.48)	56.8 (.507)	53.7 (.992)	49.2 (1.65)	60.3 (.510)
No	48.0 (.903)	45.5 (2.01)	49.5 (.207)	53.3 (.971)	48.9 (2.21)	52.0 (.211)
Poor	39.6 (.918)	39.1 (1.61)	41.9 (.255)	43.9 (1.03)	42.1 (1.82)	42.5 (.268)
Non-poor	54.0 (.847)	52.0 (1.67)	56.1 (.266)	59.2 (.914)	55.1 (1.91)	60.5 (.266)
GP consultation only	2018			2019		
N	802 439	272 664	5 657 184	767 299	262 384	5 362 486
% (SE)	23.4 (.503)	30.0 (1.04)	13.3 (.119)	21.7 (.508)	30.0 (1.04)	12.6 (.115)
Man	23.7 (.758)	29.1 (1.50)	12.2 (.162)	21.3 (.748)	28.2 (1.58)	11.7 (.160)
Woman	23.1 (.673)	30.8 (1.43)	14.4 (.173)	21.9 (.690)	31.5 (1.54)	13.5 (.165)
Rural	30.2 (.659)	34.9 (1.28)	16.9 (.150)	32.5 (.830)	39.4 (1.68)	16.7 (.171)
Urban	21.7 (.606)	28.6 (1.27)	12.3 (.147)	19.1 (.587)	27.3 (1.32)	11.3 (.141)
Subsidised regimen	29.9 (.696)	36.0 (1.32)	17.2 (.162)	28.2 (.705)	35.0 (1.37)	16.5 (.160)
Contributory regimen	17.7 (.790)	23.7 (1.76)	10.5 (.195)	16.2 (.785)	24.4 (1.91)	9.4 (.182)
Chronic disease=Yes	31.9 (.815)	34.8 (1.36)	24.1 (.407)	29.3 (.833)	33.4 (1.45)	22.7 (.412)
No	15.1 (.547)	20.6 (1.41)	11.8 (.122)	14.9 (.590)	23.1 (1.57)	10.9 (.114)
Poor	27.8 (.798)	32.8 (1.50)	15.6 (.172)	26.3 (.792)	33.3 (1.55)	15.5 (.178)
Non-poor	20.6 (.643)	27.9 (1.41)	11.8 (.161)	18.9 (.656)	27.2 (1.57)	10.8 (.149)
TOTAL	3 434 696	908 352	42 409 145	3 543 227	874 137	42 454 725

*Bivariate analysis of prevention-related consultation (both and only medical) in people with disabilities, with multiple disabilities and without disabilities for each year. For each independent variable, the percentage of people who consult is presented and compared (eg rural vs. urban; man vs. woman, etc.). SE in parentheses, in bold p< 0.05.
GP, general practitioner; PwD, people with disabilities; PwDm, people with multiple disabilities; PwoD, people without disabilities.

During 2018 and 2019, women with disabilities (but not with multiple disabilities) consulted GPs and dentists significantly more than men. People with disabilities and multiple disabilities living in urban areas, who were affiliated to the contributory insurance regimen and who reported an income level higher than the poverty line had a significantly higher probability of demanding both services, while there were no differences in demand for both services on the part of people with disabilities and chronic disease, compared with people with disability and without chronic disease. These findings were similar during 2018 and 2019. On the contrary, for people with disabilities and multiple disabilities, living in rural areas, being affiliated to the subsidised insurance regimen, being poor or having a chronic illness were associated with a higher GP-only consultation, compared with people without disabilities in both years. Finally, 71% of children with disabilities aged 5 to 14 years reported

having attended consultations with a GP and a dentist; this percentage decreases as age increases, reaching 41% for people aged 75 years or older. Conversely, GP-only consultations had an inverse link, with lower percentages in young people that increased with age, therefore reducing dentist consultation.

The analysis of barriers to health-service access revealed that, excluding people who do not consult because they feel healthy or because they had no need, people with disabilities reported more barriers in getting an appointment promptly (19.6 vs 16.8%; p=0.002) and more transportation barriers (4.3 vs 1.8%; p<0.001), compared with people without disabilities. Contrary to expectations, no significant differences were identified between people with and without disabilities in reporting financial barriers to their access to health services (16.3 vs 16.4%; p=0.90). People with multiple disabilities reported a higher proportion of transportation barriers (8.4 vs 1.8%;

**Table 3** Multinomial multivariate logistic model: consultation without immediate health-related need.

	Both	GP	Both	GP	Both	GP
	RRR PwD	RRR PwD	RRR PwD	RRR PwD	RRR PwDm	RRR PwDm
Female	2.147*** (0.0217)	1.720*** (0.0219)	1.566*** (0.0489)	1.216*** (0.0407)	1.194*** (0.0714)	1.007 (0.0600)
Poor	0.889*** (0.00922)	0.968** (0.0123)	0.879*** (0.0300)	0.954 (0.0346)	0.849** (0.0567)	0.863** (0.0580)
Urban	1.538*** (0.0150)	1.101*** (0.0134)	1.538*** (0.0490)	1.106*** (0.0376)	1.675*** (0.103)	1.153** (0.0706)
Chronic disease	2.597*** (0.0391)	3.281*** (0.0532)	2.107*** (0.0676)	2.721*** (0.0915)	1.930*** (0.118)	2.552*** (0.157)
Subsidised insurance regimen	0.622*** (0.00750)	0.914*** (0.0143)	0.615*** (0.0248)	0.953 (0.0430)	0.639*** (0.0518)	1.005 (0.0854)
Year=2018	0.912*** (0.00806)	0.991 (0.0109)	0.837*** (0.0249)	0.899*** (0.0285)	0.813*** (0.0474)	0.874** (0.0509)
Year=2019	Base	Base	Base	Base	Base	Base
Constant	0.728*** (0.0298)	0.108*** (0.00575)	2.927*** (0.367)	0.324*** (0.0467)	5.688*** (1.368)	0.558** (0.145)
Observations	305 631	305 631	32 365	32 365	9276	9276

Estimated parameters in the multinomial logistic model for preventative consultation with doctor and dentist (both), with doctor only (GP), compared with none in people without disabilities, people with disability and people with multiple disabilities. Relative risk ratios are presented in comparison with no consultation at all. Control variables: age, department, educational level, occupation. Robust standard error in parentheses *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Data on consulto to dentist only can be found online supplemental table 2. PwD, people with disabilities; PwDm, people with multiple disabilities; RRR, relative risk ratio.

$p < 0.001$); however, as for people with disabilities, no statistically significant difference was found for financial barriers compared with people without disabilities (18.9 vs 16.4%; $p = 0.18$).

The multinomial multivariate model is presented in table 3. The results show that, compared with people without disabilities, people with disabilities have a higher RRR in terms of consultation with both GP and dentist, with GP only and with dentist only by about 35% (RRR 1.349 (95% CI: 1.233 to 1.476; $p < 0.001$)), and higher RRR in terms of GP-only consultation (RRR 1.338 (95% CI: 1.206 to 1.484; $p < 0.001$)) compared with no consultation. For people with disability, five factors were associated with a higher probability of demanding both services compared with demanding none: sex (female), not living below the national poverty line, access to health insurance (contributory regimen), place of residence (urban areas) and reporting living with a chronic disease (table 3, column 4). Additionally, poor people with disabilities, compared with people with disabilities who were not poor, were less likely to use both services in the last 12 months, as compared with none (RRR 0.879, 95% CI: 0.822 to 0.940; $p < 0.001$). No significant difference was found between poor and non-poor people with disabilities when GP-only consultation or dentist-only consultation were analysed in comparison with none.

People with multiple disabilities living in poverty, compared with those not in poverty, had a significantly lower probability of visiting both GP and dentist in the

previous 12 months (RRR 0.849; 95% CI: 0.745 to 0.968; $p = 0.014$). Also, they had a lower probability of visiting the GP only (RRR 0.863; 95% CI: 0.756 to 0.984; $p = 0.028$), compared with the probability of no visit to any service; therefore, they are more likely not to visit any services (table 3, column 7).

Consultation for curative treatment

The proportion of people reporting health problems was significantly higher for people with disabilities (11%) and multiple disabilities (14 per cent) compared with people without disabilities (6%) in 2019, with similar findings in 2018. There was, however, a significant reduction in the proportion of people reporting health problems and demanding in-patient and outpatient care in 2020, compared with 2019 (table 4). During 2020, the demand for outpatient services increased by 4.2 pp, 8.0 pp and 7.1 pp for people with disabilities, multiple disabilities and without disabilities, respectively, compared with 2019. In contrast, the number of hospitalisations declined in the same period by 4.7 pp, 8.7 pp and 2.7 pp in people with disabilities, multiple disabilities and without disabilities, respectively.

Outpatient consultation because of health need

The probability of demanding outpatient health services during 2018 and 2019 was around 3 pp higher for people with disabilities, compared with people without disabilities; in 2020, no significant differences were observed

Table 4 Bivariate analysis: consultation because of any health problems experienced in the last 30 day.

	PwD	PwDm	PwoD	PwD	PwDm	PwoD
Yes	458 802	137 706	2 500 667	378 304	120 212	2 367 431
% (SE)	13.4 (.374)	15.2 (.732)	5.9 (.078)	10.7 (.419)	13.8 (.919)	5.6 (.092)
	2020			2021		
	PwD	PwDm	PwoD	PwD	PwDm	PwoD
Yes	202 706	76 667	1 108 111	277 916	94 292	1 354 609
% (SE)	7.7 (.413)	9.5 (.929)	2.5 (.059)	9.7 (.466)	10.4 (.832)	3.0 (.073)
Outpatient consultation *						
	2018			2019		
	PwD	PwDm	PwoD	PwD	PwDm	PwoD
Demanded	310 765	102 912	1 508 179	262 171	89 743	1 405 000
% (SE)	67.7 (1.30)	74.7 (1.98)	60.3 (.638)	69.3 (1.97)	74.7 (3.32)	59.4 (.848)
	2020			2021		
	PwD	PwDm	PwoD	PwD	PwDm	PwoD
Demanded	148 978	63 434	737 263	231 412	81 101	993 862
% (SE)	73.5 (2.32)	82.7 (3.10)	66.5 (1.09)	83.3 (1.75)	86.0 (2.4)	73.4 (1.07)
In-patient consultation (last 12 months)						
	2018			2019		
	PwD	PwDm	PwoD	PwD	PwDm	PwoD
Was hospitalised	519 236	195 029	2 283 876	492 402	183 374	2 242 276
% (SE)	15.1 (.44)	21.5 (.957)	5.4 (.082)	13.9 (.462)	21.0 (1.06)	5.3 (.087)
TOTAL	3 434 696	908 352	42 409 145	3 543 227	874 137	42 454 725
	2020			2021		
	PwD	PwDm	PwoD	PwD	PwDm	PwoD
Was hospitalised	242 216	99 407	1 134 595	333 718	134 523	1 423 087
% (SE)	9.2 (.43)	12.3 (.924)	2.6 (.058)	11.6 (.506)	14.8 (.978)	3.2 (.073)
TOTAL	2 647 097	806 242	44 210 214	2 872 881	906 464	44 663 871

Bivariate analysis of curative consultation, ambulatory and hospitalised, in people with disabilities, with multiple disabilities and without disabilities for each year. For each independent variable, data can be found in online supplemental table 3. SE in parentheses. * p< 0.05
 *Last month if any health problems reported
 PwD, people with disabilities; PwDm, people with multiple disabilities; PwoD, people without disabilities.

between people with and without disabilities, in terms of access to health services, compared with 2019. For people with disabilities, however, demand for outpatient health services was 6 pp lower in 2020 in comparison with the previous year (OR=0.76 95% CI 0.64 to 0.90; p<0.001), resulting in no difference in demand for health services by people with and without disabilities for 2020. Therefore, in 2020, people with disabilities continued demanding health services, but with a reduction in comparison with 2019, and with no significant differences between people with and without disabilities in 2020.

For people with disabilities, living in an urban area (OR 1.331 95% CI 1.18 to 1.50; p<0.001) and having a chronic illness (OR 1.345 95% CI 1.19 to 1.52; p<0.001) were associated with an increase close to 6 pp in the demand for outpatient services, while being affiliated to the subsidised insurance regimen (OR 0.775 95% CI 0.66 to 0.90; p<0.001) was associated with a 5 pp reduction in probability of demand

for outpatient services by people with disabilities. Contrary to the results observed in the previous analysis (demand for GP and dentist consultations without need), there was no difference in terms of sex on the part of people with disabilities (OR 0.928 95% CI 0.83 to 1.04; p=0.216), and unlike the previous bivariate analysis, no differences in the demand for services were found between poor and non-poor people with disability (OR 0.968; 95% CI 0.85 to 1.10; p=0.604). Similar results were found when the group of people with multiple disabilities was analysed. All the results are summarised in table 5.

In-patient services during the last 12 months

The percentage of patients hospitalised during 2020 declined by 4.7 pp for people with disabilities. This reduction was larger than the one observed for people without disabilities (2.7 pp) in the same year. A multivariate logistic model was estimated,

Table 5 Logistic model for curative consultation.

	OR PwoD	OR PwD	OR PwDm	OR PwoD	OR PwD	OR PwDm
Female	1.071** (0.0316)	0.928 (0.0557)	0.882 (0.0947)	1.086*** (0.0154)	0.846*** (0.0223)	0.885*** (0.0377)
Poor	0.985 (0.0302)	0.968 (0.0617)	0.944 (0.107)	1.082*** (0.0156)	1.049 (0.0304)	1.052 (0.0505)
Urban residence	1.197*** (0.0347)	1.331*** (0.0805)	1.531*** (0.167)	1.194*** (0.0163)	1.176*** (0.0323)	1.235*** (0.0559)
Chronic disease	1.506*** (0.0466)	1.345*** (0.0820)	1.441*** (0.171)	3.299*** (0.0494)	2.187*** (0.0613)	2.091*** (0.107)
Subsidised regimen	0.683*** (0.0250)	0.775*** (0.0606)	0.665*** (0.101)	0.996 (0.0170)	1.043 (0.0354)	1.063 (0.0605)
Year						
2018	0.901*** (0.0288)	0.895 (0.0613)	0.964 (0.121)	1.108*** (0.0167)	1.062* (0.0328)	1.062 (0.0553)
2019	Base	Base	Base	Base	Base	Base
2020	0.944 (0.0382)	0.759*** (0.0660)	0.716** (0.112)	0.492*** (0.00909)	0.558*** (0.0212)	0.518*** (0.0326)
2021	1.576*** (0.0698)	1.543*** (0.146)	1.428** (0.236)	0.566*** (0.0101)	0.648*** (0.0241)	0.585*** (0.0354)
Constant	0.992 (0.117)	1.507 (0.390)	2.368* (1.045)	0.0687*** (0.00382)	0.0946*** (0.00951)	0.0645*** (0.0101)
Observations	26413	6385	2165	603278	56308	16951

Estimated parameters in the logistic model for curative consultation at an outpatient clinic (left) because of health need and in-patient (right) for people without disabilities, people with disability and people with multiple disabilities. ORs are presented. Control variables: age, department, education level, occupation. Robust standard error in parentheses *** p<0.01, ** p<0.05, * p<0.1 PwD, people with disabilities; PwDm, people with multiple disabilities; PwoD, people without disabilities.

finding that overall, the probability of hospitalisation is approximately 170% higher for people with disability, compared with people without disabilities (OR 2.685; 95% CI: 2.445 to 2.947; p<0.001). In addition, when studying only people with disabilities, women compared with men had a lower probability of demanding hospitalisation (OR 0.846; 95% CI: 0.80 to 0.89; p<0.001). Additionally, people with disabilities and chronic diseases had a more than 185% probability of being hospitalised. No significant difference was found in the probability of hospitalisation of people with disabilities (OR 1.049; 95% CI: 0.99 to 1.11; p=0.101) living in poverty. Finally, when we compare the demand for in-patient services between 2020 and 2019 by people with disabilities, a significant reduction of 45% of the probability was observed (OR 0.558 (95% CI: 0.52 to 0.60); p<0.001) (table 5).

DISCUSSION

This article has analysed a large representative survey over 4 years in Colombia to study how the probability of seeking preventative or curative health treatment was associated with having or not having a disability from 2018 to 2021. The results showed that people with disabilities live

in social disadvantage, experience economic exclusion and have a worse human-capital status, and although they demand more medical services given their health condition (preventative, in-patient and outpatient services), they demand less dental care. Although living in poverty affects preventative dental consultations, it was not associated with facing a larger number of barriers to getting medical treatment. Moreover, even though utilisation of all medical services was higher in people with disability, the COVID-19 pandemic reduced the demand for health services across the entire population; however, people with disabilities stand out as particularly vulnerable, likely to face a higher number of barriers to their access to healthcare, both as in-patients and as outpatients in Colombia during the COVID-19 pandemic.

The results suggest that people with disabilities, especially those with multiple disabilities, are likely to be in a worse socioeconomic position, consistent with previous reports,¹⁷ yet their access to medical health services for preventative treatment is not worse than it is for people without disabilities. These results are also consistent with a recent systematic review, finding more frequent use of primary healthcare services and outpatient or hospital admission in countries in LAC.¹¹ However, for people

with disability, access to dental preventative healthcare is limited, as also found by Rodriguez Gatta. While there is some variability among people with disabilities in terms of socioeconomic factors, such as education or employment inclusion, affecting the possibility of access to services, the results suggest that in Colombia health services for people with disabilities and multiple disabilities is more accessible than for people without disabilities, even when adjusting for poverty, age, education, affiliation regime and region, with two notable exceptions: preventative dental consultations and consultations for non-hospital treatment in 2020.

Our findings indicate a higher demand for medical services among people with disabilities, including both preventative and curative care in outpatient and in-patient settings. For preventative and outpatient services, increased utilisation correlates with being female, residing in urban areas and having a chronic disease. Interestingly, while being insured under the subsidised regimen was associated with reduced use of preventative and curative out-patient services, poverty itself did not diminish the demand for these services. This distinction suggests that the structure of the subsidised insurance regimen, rather than socioeconomic status alone, is a determinant in the utilisation of preventative care in Colombia. Similar findings were found for in-patient services. The data also reveal the influence of urban residency across all service types, a finding which could reflect disparities in the availability and quality of healthcare infrastructure between urban and rural areas. The finding of type of health insurance as a significant barrier to healthcare utilisation is consistent with the Banco de la República paper, which highlights the inferiority of the subsidised regime compared with the contributory regime, based on the multidimensional health-quality index.¹⁸ A similar trend of access limitations has been observed in Chile, where people with disabilities who are affiliated with public health services experience greater barriers to healthcare.²⁴ It is notable that those covered by the subsidised insurance regime, often in rural and remote areas, encounter additional vulnerabilities.¹⁸ This could lead to reduced access for these individuals, despite the unification of the benefit plans for the subsidised and contributory regimes in 2012, as mandated by regulatory authorities.²⁵

This article, while focused on monetary poverty, reveals a higher prevalence of poverty in households that include people with disabilities, especially those with multiple disabilities. Yet it is noteworthy that people with visual disabilities, who constitute the largest subgroup, are the least impoverished among those with disabilities. Despite this, and apart from disparities in dental care, the demand for medical health services, both preventative and curative, is not significantly associated with poverty among people with disabilities in Colombia. This pattern suggests that there may be protective factors within the country's health system, which mitigate the potential impact of poverty on healthcare utilisation. Moreover, this could indicate other influences, such as the

prioritisation of medical care due to its perceived urgency or affordability, highlighted by Chang *et al*, who report that out-of-pocket health expenses in Colombia account for 20.6% of total health spending, a figure that is below the global average, suggesting a degree of financial protection for the population, including those who are poor and disabled.^{26,27} This stability in healthcare demand, despite the economic situation, points to the possibility of a more equitable health system, higher affordability or the existence of other supportive mechanisms that facilitate access to necessary medical services.

An important concern identified in this study is the significant under-utilisation of preventative dental services by people with disabilities in comparison with the population without disabilities and in poor people with disabilities compared with non-poor people. The decreased use of dental services for people with disabilities remain understudied; however, in Colombia, a study among general population reveals that, although it is improving, the coverage for first dentist visit was only 13.9% in 2019.²⁸ In people with disabilities, as suggested by Lee, the type of functional difficulty is associated with facing challenges to access to dental services and higher costs.²⁹

From the point of view of the dentist, Cataño *et al* developed a survey of 147 professionals in Colombia, revealing that only 37.4% report having the knowledge for treating a person with disability, and in a dental emergency, only 83.7% would treat the individual; they also report the architectural or, in general, the adequacy of facilities in 60.5% of their practices.³⁰ The individual and professional factors coupled with the fact that out-of-pocket dental expenses can consume as much as 8.2% of the total monthly income²⁷ induce oral health to be neglected by poor people with disabilities as they allocate their limited financial resources to more pressing needs. Therefore, the intersection of a low coverage for dental services in the general population, poverty and disability amplifies the social and structural factors contributing to inequities in oral health in Colombia. Our results suggest that people with multiple disabilities face greater difficulties in their utilisation of dental care. These findings are consistent with studies, although scarce, reported by Rodriguez Gatta in LAC, highlighting a lower use of dental health services in people with severe disabilities¹¹ and inequities in oral health identified in other studies concerning vulnerable groups facing socioeconomic disadvantages.³¹

The COVID-19 pandemic disproportionately affected people with disabilities, with reports of barriers to routine and rehabilitation health services for this population.³² Despite this, there is no information available on preventative consultations after 2019 in the QoLS. In treatment consultations by people with disabilities, a higher prevalence of health problems and chronic diseases is expected to result in increased demand for health services. In this study, this was true until 2020; however, unexpectedly, in 2020 a differential reduction in outpatient treatment consultations was found for people with disabilities, without a change in the access of people without disabilities, which may be due to specific barriers in providing care to people with disabilities. These barriers



might include physical and attitudinal barriers²⁴ as well as the quarantine implemented in 2020, when it was recommended that people with disabilities did not leave their houses. In general, people with disabilities perceive that they are treated as low-priority patients when demanding services,³³ and more specifically, with the onset of the COVID-19 pandemic, the implementation of discriminatory triage strategies explicitly placed people with disabilities in a low-priority category for receiving treatment for the disease.^{34,29} Compared with 2019, there was a significant increase in outpatient consultations for people with disabilities in 2021. Still, it is interesting to note that the probability of consultations for people without disabilities increased even more in the same period, thus reducing the gap between these two groups. This can be attributed to several factors, including a high demand for health services in people who suffered severe cases of SARS-COV-2,³⁵ an increase in the provision of remote clinical services³⁶ or possibly a resumption of consultations after a backlog period in 2020.

These outcomes—protection of the poor and higher utilisation of health services by people with disabilities—may be attributed to Colombia's progressive healthcare policies and programmes aimed at improving accessibility and reducing inequalities for people with disabilities. However, insurance type was found to be an important determinant in healthcare demand for people with disabilities, underscoring the importance of tailored healthcare strategies that recognise and address the unique needs of people with disabilities, ensuring equitable access across all types of healthcare services while monitoring and understanding services that adapt to changing needs, as the COVID-19 pandemic proved.

Further studies analysing the impacts of COVID-19 in longitudinal designs and comparative studies with countries in the LAC region could provide further understanding of the challenges and opportunities in caring for people with disabilities.

Strengths and Limitations

This study contributes to the literature as the first to examine the probability of access in a representative sample at various levels for four consecutive years. It analyses a question that is comparable over time and uses a pooling technique that allows for inferences in different periods, enabling the identification of differences in access to curative services during the COVID-19 pandemic. The study also explores the specific effects of poverty and disability on access to health services. However, it has some limitations. The disaggregation by the type of disability may limit the stability of results, due to a small sample size in some subtypes, although weighting procedures based on survey design weights can mitigate this issue.¹² Additionally, the questions used to detect disability in the survey may not align exactly with those proposed by the GW,¹⁶ thereby generating more disability categories, potentially overestimating prevalence compared with countries adhering to international standards. Some variables, especially preventative consultations, were not available throughout the

study period, particularly during the COVID-19 pandemic, preventing the determination of its effect during that time. Since the year only serves as a proxy for the COVID-19 pandemic, it is not possible to measure its actual impact; however, it is a good approximation. Moreover, given that the survey relies on self-reporting over an extensive period (12 months), there may be memory bias or even social desirability bias (eg, attending preventative consultations).³⁷ However, it is not possible to ascertain whether this bias differentially affects one group rather than the other. A general limitation of surveys, unlike longitudinal studies, is that changes over time cannot be assumed to exist. Finally, the QoLS does not provide information on attendance at specific cancer-prevention services such as cervical cytology, prostate examination, mammography and digestive endoscopy, among others, which previous studies have shown to pose barriers for people with disabilities.³⁸

CONCLUSION

People with disabilities in Colombia demand more health services, and, despite their being in a worse condition according to various socioeconomic indicators, few factors affect their demand for in-patient treatment. In outpatient treatment and prevention, rural residence and affiliation with the subsidised health-insurance scheme were associated with lower access to health services. Having a chronic illness in addition to disabilities, living in an urban area and being affiliated to the contributory health regimen were significantly associated with a higher probability of seeking medical attention for curative treatment. Meanwhile, factors associated with a higher probability of hospitalisation in people with disabilities were sex (male), having a chronic illness and living in an urban area. For poor people with disabilities, there is a lower probability of simultaneous preventative consultations for medical and dental care. However, there is no difference in demand for hospital and non-hospital medical treatment when comparing poor and non-poor people with disabilities. The COVID-19 pandemic differentially affected people with disabilities, significantly reducing access to non-hospital treatment services in 2020.

Contributors OME developed the theory, methodology, data analysis, and wrote the first draft. MPR conceived the idea, theory, methodology, discussed the results and verified the results. Comments on the first draft. Drafting final document. MPR is the guarantor.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

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

Patient consent for publication Not applicable.

Ethics approval Not applicable.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data is available in www.dane.gov.co

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Supplemental Table 1. Descriptive statistics of people 5 years or older with and without disability by year 2018-2021

	2018			2019		
	With disability	Multiple disability	No disability	With disability	Multiple disability	No disability
n	3,434,696 7.49% (.092)	908,352 1.98% (.046)	42,409,145	3,543,227 7.7% (.104)	874,137 1.90% (.050)	42,454,725
Age, average	52.4 (.304)	58.2 (.615)	33.1 (.071)	51.5 (.304)	59.26 (.590)	34.3 (.075)
Sex %						
Woman	55.88 (.630)	53.11 (1.18)	50.36 (.193)	55.78 (.70)	54.32 (1.32)	50.95 (.197)
Residence area %						
Urban	79.99 (.339)	78.64 (.665)	77.04 (.112)	80.94 (.380)	77.67 (.824)	75.88 (.127)
Education level % 15 years or more						
None	16.63 (.438)	28.79 (1.04)	4.54 (.067)	15.04 (.451)	30.61 (1.21)	4.47 (.073)
Primary	40.05 (.630)	43.16 (1.19)	25.06 (.177)	37.76 (.701)	42.67 (1.34)	25.91 (.193)
Secondary	27.74 (.629)	20.61 (1.08)	43.24 (.229)	30.2 (.740)	19.55 (1.29)	43.2 (.237)
Post-secondary	15.59 (.539)	7.44 (.729)	27.17 (.228)	17 (.584)	7.16 (.731)	26.42 (.220)
Occupation (%) 15 years or more						
Working	30.31 (.606)	13.62 (.854)	53.42 (.213)	33.48 (.709)	13.84 (.971)	53.62 (.219)
Looking for a job	2.32 (.230)	0.63 (.168)	4.59 (.093)	3.22 (.300)	0.82 (.199)	4.91 (.101)
Studying	4.06 (.29)	0.96 (.182)	10.55 (.131)	4.89 (.333)	1.77 (.366)	10.49 (.132)
Household chores	32.83 (.602)	25.58 (1.08)	26.37 (.179)	31.21 (.652)	25.72 (1.21)	26.46 (.188)
Permanently disabled	20.79 (.498)	47.14 (1.19)	1.09 (.038)	20.68 (.551)	49.75 (1.36)	1.5 (.050)
Other	9.68 (.385)	12.07 (.799)	3.99 (.083)	6.51 (.344)	8.01 (.739)	3.02 (.078)

Health insurance %						
Yes	95.57 (.298)	97.24 (.327)	93.53 (.099)	93.96 (.394)	96.42 (.716)	92.9 (.106)
Type of insurance %						
Contributory regimen	43.26 (.662)	39.41 (1.24)	46.13 (.204)	46.71 (.727)	39.63 (1.36)	46.6 (.208)
Chronic disease %						
Yes	49.19 (.634)	66.25 (1.10)	12.71 (.125)	46.75 (.699)	67.54 (1.20)	14.77 (.146)
Poverty %						
Poor	38.86 (.598)	43.55 (1.14)	39.79 (.179)	37.5 (.651)	46.29 (1.30)	39.67 (.184)

Standard errors in parentheses

	2020			2021		
	With disability (SE)	Multiple disability (SE)	No disability (SE)	With disability (SE)	Multiple disability (SE)	No disability (SE)
n	2,647,097	806,242	44,210,214	2,872,882	906,464	4,466,3871
	5.65% (.082)	1.72% (.047)		6.04% (.090)	1.91% (.050)	
Age, average	53.7 (.346)	58.06 (.702)	34.6 (.072)	53.9 (.353)	59.07 (.656)	34.8 (.075)
Sex %						
Woman	54.58 (.741)	52.6 (1.38)	51.09 (.188)	54.88 (.761)	53.22 (1.33)	51.22 (.194)
Residence area %						
Urban	78.4 (.429)	77.11 (.819)	76.44 (.113)	79.52 (.413)	79.35 (.721)	76.61 (.116)
Education level % 15 years or more						
None	17.48 (.530)	31.5 (1.24)	4.03 (.067)	17.23 (.532)	31.26 (1.21)	4.1 (.066)
Primary	38.8 (.746)	41.72 (1.41)	24.69 (.175)	40.18 (.776)	43.5 (1.37)	23.66 (.174)
Secondary	28.18 (.742)	19.13 (1.27)	44.54 (.222)	26.65 (.740)	18.53 (1.15)	45.05 (.23)
Post-secondary	15.54 (.630)	7.66 (.919)	26.75 (.216)	15.93 (.679)	6.71 (.811)	27.19 (.228)

Occupation (%) 15 years or more

Working	23.88 (.655)	9.50 (.893)	49.29 (.210)	24.89 (.688)	8.03 (.703)	52.14 (.216)
Looking for a job	3.1 (.293)	1.17 (.360)	6.35 (.112)	2.7 (.286)	0.941 (.361)	5.17 (.104)
Studying	3.76 (.322)	0.85 (.273)	9.96 (.123)	4.17 (.344)	1.70 (.351)	9.89 (.126)
Household chores	31.99 (.694)	19.99 (1.05)	30.04 (.184)	31.41 (.725)	21.54 (1.12)	28.7 (.186)
Permanently disabled	30.04 (.699)	60.26 (1.42)	1.60 (.051)	29.84 (.695)	59.63 (1.36)	1.5 (.048)
Other	7.23 (.470)	8.24 (.990)	2.76 (.077)	7.03 (.465)	8.17 (.912)	2.6 (.080)
Health insurance %						
Yes	95.44 (.338)	95.9 (.591)	93.19 (.103)	96.26 (.296)	97.82 (.295)	92.99 (.105)
Type of insurance %						
Contributory regimen	40.2 (.787)	36.36 (1.47)	43.87 (.200)	42.44 (.805)	35.22 (1.39)	45.19 (.297)
Chronic disease %						
Yes	52.78 (.742)	68.22 (1.31)	13.5 (.133)	54.75 (.761)	71.3 (1.67)	14 (.141)
Poverty %						
Poor	41.9 (.711)	45.75 (1.35)	42.2 (.179)	41.85 (.731)	49.01 (1.33)	42.91 (.186)

SE: Standard error; HIE: Health Insurance Entity

Supplementary Table 2. Multinomial multivariate logistic model: consultation without immediate health-related need

	Both RRR PwoD	GP RRR PwoD	Dent RRR PwoD	Both RRR PwD	GP RRR PwD	Dent RRR PwD	Both RRR PwDm	GP RRR PwDm	Dent RRR PwDm
Female	2.147*** (0.0217)	1.720*** (0.0219)	1.224*** (0.0294)	1.566*** (0.0489)	1.216*** (0.0407)	1.354*** (0.106)	1.194*** (0.0714)	1.007 (0.0600)	1.192 (0.234)
Poor	0.889*** (0.00922)	0.968** (0.0123)	0.802*** (0.0204)	0.879*** (0.0300)	0.954 (0.0346)	1.067 (0.0919)	0.849** (0.0567)	0.863** (0.0580)	0.887 (0.177)
Urban	1.538*** (0.0150)	1.101*** (0.0134)	1.429*** (0.0340)	1.538*** (0.0490)	1.106*** (0.0376)	1.495*** (0.128)	1.675*** (0.103)	1.153** (0.0706)	1.257 (0.259)
Chronic disease	2.597*** (0.0391)	3.281*** (0.0532)	1.551*** (0.0587)	2.107*** (0.0676)	2.721*** (0.0915)	1.287*** (0.109)	1.930*** (0.118)	2.552*** (0.157)	1.494** (0.303)
Subsidised insurance regimen	0.622*** (0.00750)	0.914*** (0.0143)	0.767*** (0.0215)	0.615*** (0.0248)	0.953 (0.0430)	0.670*** (0.0638)	0.639*** (0.0518)	1.005 (0.0854)	0.545** (0.130)
Year = 2018	0.912*** (0.00806)	0.991 (0.0109)	1.108*** (0.0236)	0.837*** (0.0249)	0.899*** (0.0285)	1.159* (0.0884)	0.813*** (0.0474)	0.874** (0.0509)	1.283 (0.248)
Year = 2019	Base	Base	Base	Base	Base	Base	Base	Base	Base
Constant	0.728*** (0.0298)	0.108*** (0.00575)	0.0459*** (0.00538)	2.927*** (0.367)	0.324*** (0.0467)	0.0695*** (0.0244)	5.688*** (1.368)	0.558** (0.145)	0.123*** (0.0823)
Observations	305,631	305,631	305,631	32,365	32,365	32,365	9,276	9,276	9,276

Table 3: Estimated parameters in the multinomial logistic model for preventative consultation with doctor and dentist (Both), with doctor only (GP), and with dentist only (Dent), compared with none in people without disabilities (PwoD), people with disability (PwD), and people with multiple disabilities (PwDm). Relative risk ratios (RRR) are presented in comparison with no consultation at all. Control variables: age, department, education level, occupation. Robust standard error in parentheses *** p<0.01, ** p<0.05, * p<0.1

Supplementary Table 2. Multinomial multivariate logistic model: consultation without immediate health-related need

	Both RRR PwoD	GP RRR PwoD	Dent RRR PwoD	Both RRR PwD	GP RRR PwD	Dent RRR PwD	Both RRR PwDm	GP RRR PwDm	Dent RRR PwDm
Female	2.147*** (0.0217)	1.720*** (0.0219)	1.224*** (0.0294)	1.566*** (0.0489)	1.216*** (0.0407)	1.354*** (0.106)	1.194*** (0.0714)	1.007 (0.0600)	1.192 (0.234)
Poor	0.889*** (0.00922)	0.968** (0.0123)	0.802*** (0.0204)	0.879*** (0.0300)	0.954 (0.0346)	1.067 (0.0919)	0.849** (0.0567)	0.863** (0.0580)	0.887 (0.177)
Urban	1.538*** (0.0150)	1.101*** (0.0134)	1.429*** (0.0340)	1.538*** (0.0490)	1.106*** (0.0376)	1.495*** (0.128)	1.675*** (0.103)	1.153** (0.0706)	1.257 (0.259)
Chronic disease	2.597*** (0.0391)	3.281*** (0.0532)	1.551*** (0.0587)	2.107*** (0.0676)	2.721*** (0.0915)	1.287*** (0.109)	1.930*** (0.118)	2.552*** (0.157)	1.494** (0.303)
Subsidised insurance regimen	0.622*** (0.00750)	0.914*** (0.0143)	0.767*** (0.0215)	0.615*** (0.0248)	0.953 (0.0430)	0.670*** (0.0638)	0.639*** (0.0518)	1.005 (0.0854)	0.545** (0.130)
Year = 2018	0.912*** (0.00806)	0.991 (0.0109)	1.108*** (0.0236)	0.837*** (0.0249)	0.899*** (0.0285)	1.159* (0.0884)	0.813*** (0.0474)	0.874** (0.0509)	1.283 (0.248)
Year = 2019	Base	Base	Base	Base	Base	Base	Base	Base	Base
Constant	0.728*** (0.0298)	0.108*** (0.00575)	0.0459*** (0.00538)	2.927*** (0.367)	0.324*** (0.0467)	0.0695*** (0.0244)	5.688*** (1.368)	0.558** (0.145)	0.123*** (0.0823)
Observations	305,631	305,631	305,631	32,365	32,365	32,365	9,276	9,276	9,276

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