

Utilization of the Brazilian public health system by privately insured individuals: a literature review [SUPPLEMENTARY MATERIAL]

Search strategies

Virtual Health Library (VHL)

(mh:(n03.219.521.576.343* OR sp9.110.010* OR n04.452.758.244*) OR tw:(“health insurance” OR “private health plan” OR “private health plans” OR “health insurer” OR “private health company” OR “self-management” OR “medical cooperative” OR “group medicine” OR “health maintenance organization” OR “health maintenance organizations” OR “philanthropy” OR “health benefit plan” OR “health benefit plans”) OR ((sh:“utilization” OR tw:“utilization”) AND (mh:(sp1.001.012.010.033 OR sp9.160.030) OR tw:(“Sistema Único de Saúde” OR “Unified Health System”)))) AND NOT db:“MEDLINE” AND (instance:“regional”) AND la:(“es” OR “pt” OR “en”) AND type:(“article” OR “thesis”)

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((Brazil[mh] Brazil OR Brasil OR SUS OR “Sistema Único de Saúde” OR “Unified Health System”) AND (“insurance, health” [mh] OR “group practice” [mh] OR “health insurance” OR “private health plan” OR “private health plans” OR “health insurer” OR “private health company” OR “self-management” OR “medical cooperative” OR “group medicine” OR “health maintenance organization” OR “health maintenance organizations” OR “philanthropy” OR “health benefit plan” OR “health benefit plans”)) OR ((“utilization” [sh] OR “utilization”) AND (“SUS” OR “Sistema Único de Saúde” OR “Unified Health System”))) AND (English[lang] OR Portuguese[lang] OR Spanish[lang])

RePEc

(Brazil | “Sistema Único de Saude” | “Unified Health System”) + (I13 | “health insurance” | “private health plan” | “private health plans” | “health insurer” | “private health company” | “self-management” | “medical cooperative” | “group medicine” | “health maintenance organization” | “health maintenance organizations” | “philanthropy” | “health benefit plan” | “health benefit plans”) | (utilization + (“Sistema Unico de Saude” | “Unified Health System”)) — in “articles”, from 1990.

Web of Science (SCI-EXPANDED, SSCI)

((CU=Brazil OR TS=(Brazil OR SUS OR “Sistema Único de Saude” OR “Unified Health System”)) AND TS=((“health insurance” OR “private health plan” OR “private health plans”) OR (“health insurer” OR “private health company”) OR (“self-management” OR “medical cooperative” OR “group medicine” OR “health maintenance organization” OR “health maintenance organizations” OR “philanthropy” OR “group medicine” OR “health benefit plan” OR “health benefit plans”)) OR TS=(“utilization” AND “SUS” OR “Sistema Unico de Saude” OR “Unified Health System”))) AND SU=(“Health Care Sciences & Services” OR “Public, Environmental & Occupational Health” OR “Business & Economics”) — restricting to “articles” (document type) in English, Portuguese and Spanish (languages).

Web of Science (SciELO Citation Index)

TS=((Brazil OR “Sistema Único de Saúde” OR “Unified Health System”) AND (“health insurance” OR “private health plan” OR “private health plans” OR “health insurer” OR “private health company” OR “self-management” OR “medical cooperative” OR “group medicine” OR “health maintenance organization” OR “health maintenance organizations” OR “philanthropy” OR “health benefit plan” OR “health benefit plans” OR (utilization AND (“Sistema Unico de Saude” OR “Unified Health System”)))) AND SU=(“Health Care Sciences & Services” OR “Public, Environmental & Occupational Health” OR “Business & Economics”) — restricting to “research article” (document type) in English, Portuguese and Spanish (languages).

Capes’ Dissertations and Theses Database

(“health insurance” OR “private health plan” OR “private health plans” OR “health insurer” OR “private health company” OR “self-management” OR “medical cooperative” OR “group medicine” OR “health maintenance organization” OR “health maintenance organizations” OR “philanthropy” OR “health benefit plan” OR “health benefit plans”) OR (“utilization” AND (“SUS” OR “Sistema Único de Saúde” OR “Unified Health System”))

Supplementary tables

For study characteristics and citation, please refer to Table 1 and References in the article.

Table 1 Utilization of any health care paid by the Brazilian Unified National Health System (SUS) among people with and without private health insurance.

Study	Utilization of (SUS for)	Sample	With PHI	Without PHI	PR
Ribeiro et al. ¹⁴ (2006)	Any health care service	People who used any health care service in the last 15 days	12.7%	83.2%	0.15
Santos et al. ⁵ (2008)	Any health care service	People who used any health care service in the last 15 days	11.8%	80.5%	0.15
Silva et al. ²⁵ (2011)	Any health care service	People who used any health care service in the last 15 days, in 2008	PHI sponsored by public employer: 13.8% (12.5-15.1)	79.9% (79.3-80.6)	0.17
			PHI not sponsored by public employer: 13.4% (12.6-14.2)		0.17
Silva et al. ²⁵ (2011)	Any health care service	People who used any health care service in the last 15 days, in 2003	PHI sponsored by public employer: 15.4% (14.0-17,0)	82.8% (82.0-83.5)	0.19
			PHI not sponsored by public employer: 11.5% (10.8-12.3)		0.14

The proportions represent whether SUS was used in the last time the person used a health care service.
PHI: private health insurance; PR: prevalence ratio.

Table 2 Brazilian Unified National Health System (SUS) as the usual source of care among people with and without private health insurance.

Study	With PHI	Without PHI	PR	Extra information
Arruda et al. ³⁷ (2017)	23.1%	89.1%	0.26	OR: 0.04; 95%CI: 0.02-0.06; p < 0.001 Adjusted OR: 0.05; 95%CI: 0.03-0.09; p < 0.001

95%CI: 95% confidence interval; OR: odds ratio; PHI: private health insurance; PR: prevalence ratio.

Table 3 Utilization of outpatient care paid by the Brazilian Unified National Health System (SUS) among people with and without private health insurance.

Study	Utilization of (SUS for)	Sample	With PHI	Without PHI	PR
Bahia ⁸ (1999) Travassos et al. ¹¹ (2000)	Public health center	People who used any health care service in the last 30 days	Northeast: ~2% Southeast: ~5%	Northeast: ~25% Southeast: ~40%	Northeast: ~0.1 Southeast: ~0.1
Pessoto et al. ¹⁶ (2007)	Public health center	People who used any health care service in the last 30 days	3.9%	37.0%	0.10
Barreto Jr. et al. ¹⁸ (2008)	Public health center	People who used any health care service in the last 30 days	6.8%	45.4%	0.15
Oliveira ²² (2009)	Any outpatient care	People who used any outpatient care in the last 15 days	1998: 9.6% 2003: 12.3%	1998: 84.9% 2003: 87.8%	1998: 0.11 2003: 0.14
	Any outpatient care	People using any outpatient care in the last 15 days [counting as “with PHI” only if the PHI’s policy covers the procedure]	1998: 8.3% 2003: 11.0%	1998: 84.9% 2003: 87.8%	1998: 0.10 2003: 0.12
	Chemotherapy, radiotherapy, hemodialysis, hemotherapy	People using such care in the last 15 days [counting as “with PHI” only if the policy covers the procedure]	2003: 27.3%	NA	NA
Viacava et al. ¹³ (2005)	Any outpatient consultation	People who attended any outpatient consultation in the last 12 months	18.1%	76.6%	0.24
	Antenatal visits	People who attended any antenatal visits in the last 5 years	20.2%	87.0%	0.23
Amorim & Barros ³¹ (2014)	Uterine cervix cancer screening	Women aged 20-59 years with a screening in the last 3 years	8.2%	99.2%	0.08 (p < 0.001)
Olsen ³⁴ (2014)	Uterine cervix cancer screening	Women 20-59 years old with a screening in the last 3 years	8.8%	79.1%	0.11
	Breast cancer screening	Women 40-69 years old with up-to-date breast cancer screening	4.4%	91.1%	0.05
	Emergency care	People seeking emergency care in the last 15 days	22.8%	100.0%	0.23
	Non-urgent care	People seeking non-urgent care in the last 15 days	12.5%	99.7%	0.12
	Immunization against influenza	People with diabetes mellitus who received immunization	84.9%	100.0%	0.85
	Immunization against pneumococcus	People with diabetes mellitus who received immunization	91.1%	100.0%	0.91
Garcia-Subirats et al. ³³ (2014)	Any specialized public care service	People with a health problem or seeking for health care in the last three months	2.8%	18.6%	0.15 *
	Any emergency care service	People with a health problem or seeking for health care in the last three months	12.5%	33.8%	0.37 **
	Any primary care service	People with a health problem or seeking for health care in the last three months	5.9%	41.0%	0.14 ***
Fernandes et al. ²¹ (2009)	Primary care center in the last 15 days	Families assigned to a FHS team	5.5%	15.0%	0.37 ****
Oliveira et al. ²⁹ (2012)	Primary care center in the last 12 months	Families assigned to a FHS team	24.4%	47.7%	0.51 *****

While Garcia-Subirats et al. ³³, Fernandes et al. ²¹, and Oliveira et al. ²⁹ report the proportion of people using a given service from SUS in the time frame, the other studies reported whether SUS was used in the last time users attended a health care service.

* Adjusted OR: 0.14; 95%CI: 0.08-0.27);

** Adjusted OR: 0.30; 95%CI: 0.21-0.42;

*** Adjusted OR: 0.15; 95%CI: 0.09-0.24;

**** Adjusted PR: 0.43; 95%CI: 0.28-0.64;

***** 39.3% of those with PHI and 59.0% of those without PHI sought for care (PR: 0.67; p = 0.003); and among those seeking care 62.0% had PHI and 80.4% did not have it, having received care anyway (PR: 0.77; p < 0.001).

95%CI: 95% confidence interval; FHS: Family Health Strategy; NA: not available; OR: odds ratio; PHI: private health insurance; PR: prevalence ratio.

Table 4 Users of primary care centers of the Brazilian Unified National Health System (SUS) among people with and without private health insurance.

Study	With PHI	Without PHI	PR	Extra information
Silva et al. ¹⁰ (2000)	88.8%	92.2%	0.96	Sum of strata; no information on correlation or weights
Pereira et al. ²³ (2010)	40.0%	73.0%	0.54	95%CI for the PR: 0.34-0.82
Bousquat et al. ²⁷ (2012)	14.8%	54.3%	0.27	p < 0.001; adjusted PR incalculable with p = 0.005
Bonello & Corrêa ³² (2014)	71.1%	80.4%	0.88	OR: 0.60; 95%CI: 0.24-1.51
Santiago et al. ³⁵ (2014)	NA	NA	NA	OR for frequent use: 0.19; 95%CI: 0.15-0.25; p < 0.001) Adjusted OR: 0.27; 95%CI: 0.19-0.37, p < 0.001
Garcia-Subirats et al. ³³ (2014)	49.1%	85.0%	0.58	Proportion of people knowing the local primary care center, not of people using them

95%CI: 95% confidence interval; NA: not available; OR: odds ratio; PHI: private health insurance; PR: prevalence ratio.

Table 5 Utilization of the Brazilian Unified National Health System (SUS) for hospitalization among people with and without private health insurance.

Study	Utilization of (SUS for)	Sample	With PHI	Without PHI	PR
Travassos et al. ¹¹ (2000)	A public hospital	People who used any health service in the last 30 days	1.6%	7.6%	0.21
Farias & Melamed ¹² (2003) Oliveira ²² (2009)	Any hospitalization	People who undergone hospitalization in the last 12 months	1998: 13.0%	1998: 89.7%	1998: 0.14
Santos et al. ⁵ (2008) Oliveira ²² (2009)	Any hospitalization	People who undergone hospitalization in the last 12 months	2003: 15.7%	2003: 88.2%	2003: 0.18
Viacava et al. ¹³ (2005)	Any hospitalization	People who undergone hospitalization in the last 12 months	19.3%	91.0%	0.21
Oliveira ²² (2009)	Giving birth in a hospital	Women who gave birth in the last 12 months	29.0%	NA	NA
Viacava et al. ¹³ (2005)	Giving birth in a hospital	Women who gave birth in the last 5 years	25.3%	90.8%	0.28
Barros et al. ¹⁹ (2008)	Giving birth in a hospital	Women who gave birth in a hospital	42.9% *	97.7%	0.50
Olsen ³⁴ (2014)	Non-obstetric, non-psychiatric hospitalization	People who undergone hospitalization in the last 12 months	9.5%	99.1%	0.10
	Surgical hospitalization	People who undergone hospitalization in the last 12 months	7.0%	98.3%	0.07

The proportions represent whether SUS was used in last time the person attended a health care service.

* 24.2% in case of PHI covering obstetric care and 86.4% in case of PHI not covering it.

PHI: private health insurance; PR: prevalence ratio.

Table 6 Private health insurance among people using health care service paid by the Brazilian Unified National Health System (SUS).

Study	Utilization of (SUS for)	PHI among users of SUS	PHI in the general population
Santos et al. ⁵ (2008) Ribeiro et al. ¹⁴ (2006)	Any health care service in the last 15 days	7.2%	24.6%
Barata ¹⁷ (2008) Barreto Jr. et al. ¹⁸ (2008)	Any health care service in the last 30 days	12.8%	36.8%
Oliveira ²² (2009) Porto et al. ²⁴ (2011)	Any outpatient care in the last 15 days	1998: 6.7% 2003: 7.1% 2008: 8.1%	1998: 24.5% 2003: 24.6% 2008: 25.9%
Viacava et al. ¹³ (2005)	Any outpatient visit in the last 12 months	8.2%	24.2%
	Any antenatal care in the last 5 years	5.1%	24.2%
Pires et al. ³⁰ (2013)	Primary care and emergency care	30.4%	46.7% *
Zanon et al. ³⁶ (2016)	Emergency care during working hours	14.6%	37.3% *
Santos et al. ⁵ (2008) Oliveira ²² (2009)	Vaccination, injection or emergency care in the last 15 days	11.0%	24.6%
Santos et al. ⁵ (2008)	Pharmaceutical care in the last 15 days	11.2%	24.6%
Oliveira ²² (2009) Porto et al. ²⁴ (2011)	Chemotherapy, radiotherapy, hemodialysis, hemotherapy	2003: 11.6% 2008: 12.8%	2003: 24.6% 2008: 25.9%
Oliveira ²² (2009)	Medical consultations	6.5%	24.6%
Santos et al. ⁵ (2008) Oliveira ²² (2009) Porto et al. ²⁴ (2011)	Any hospitalization in the last 12 months	1998: 5.7% 2003: 6.7% 2008: 7.8%	1998: 24.5% 2003: 24.6% 2008: 25.9%
Viacava et al. ¹³ (2005)	Any hospitalization in the last 12 months	7.0%	24.2%
Hernandes et al. ²⁸ (2012)	Any hospitalization in the last 12 months	17.9%	~40%
Viacava et al. ¹³ (2005)	Hospitalization for giving birth in the last 5 years	5.9%	24.2%
Porto et al. ²⁴ (2011)	Hospitalization for surgery	1998: 8.4% 2003: 9.0% 2008: 8.8%	1998: 24.5% 2003: 24.6% 2008: 25.9%
Santos et al. ⁵ (2008)	Hospitalization for surgery	8.9%	24.6%
	Hospitalization for an exam	7.7%	
	Hospitalization for a cesarean delivery	7.4%	
	Hospitalization for psychiatric treatment	4.2%	24.6%
Hospitalization for vaginal delivery	6.0%		
Hospitalization for clinical treatment	6.0%		

* “Coverage ratio” reported by the Brazilian National Regulatory Agency for Private Health Insurance and Plans (ANS) for the municipality in the study year; this is the ratio between the number of policies and the population, and thus people with more than one policy are counted more than once.
PHI: private health insurance.