Cardiovascular Disease and Health Care System Impact on Functionality and Productivity in Argentina: A Secondary Analysis

Juan I. Calcagno, MD, MSc[1,2,*], Sarah J. Iribarren, RN, PhD[1,2,3], Joaquín E. Caporale, BEcon, MSc[1], Patricia F. Pearce, MPH, PhD, FNP-BC, FAANP, FANP[4], Dorairaj Prabhakaran, MD, PhD[5], Andrés Pichón-Riviere, MD, PhD[1]

[1]Institute of Clinical Effectiveness and Health Policy, Buenos Aires, Argentina; [2]Fogarty International Clinical Research Scholars Program, Bethesda, MD, USA; [3]Columbia University, New York, NY, USA; [4]Loyola University, New Orleans, LA, USA; [5]Centre for Chronic Disease Control, New Delhi, India

A B S T R A C T

Objectives: To examine the impact of cardiovascular disease (CVD) events on patient functionality and productivity on the basis of patient use of public or social/private institution health care. **Methods:** A secondary analysis was conducted of data drawn from records of Argentinian patients, 3 to 15 months posthospitalization after a CVD event, who had originally participated in a multicountry, cross-sectional study assessing the microeconomic impact of a CVD event. Respondents were stratified according to their use of health care institution (public or social/private). Among these groups, pre- and post-CVD event changes in functionality and productivity were compared. **Results:** Participants' (N = 431) mean age was 56.5 years, and 73.5% were men. Public sector patients reported significantly higher rates of decline in ability to perform *moderate* activities (P < 0.05), a greater decrease in *time spent at work* (P < 0.01), a greater *limit in the type of work-related activities* (P < 0.01), and a higher rate of emotional problems (P < 0.01). Having health insurance (private or social) (odds ratio [OR] = 0.55; 95% confidence interval [CI] 0.35–0.85; P < 0.01) and a higher income (OR = 0.99; 95% CI 0.99–0.99; P < 0.01) were inversely and significantly associated with loss of productivity. Cerebrovascular disease (OR = 2.55; 95% CI 1.42–4.60; P < 0.01) was also significantly associated with productivity loss. **Conclusions:** In Argentina, patients receiving care in the public sector experienced a greater impact on functionality and productivity after their hospitalization for a CVD event. Lack of insurance, low income, and cerebrovascular disease event were the major determinants of productivity loss. Further investigation is needed to better understand contributors to these differences.

Keywords: cardiovascular disease, epidemiology, functionality, productivity.

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Introduction

Cardiovascular disease (CVD) is a major contributor to disability and the leading cause of death worldwide, representing 30% of all deaths [1]. Nevertheless, 80% of the mortality due to CVDs occurs in low- and middle-income countries (LMICs) [2–5] where CVD affects patients 10 to 15 years earlier than in high-income countries [6]. For LMICs, the dual burden of disease from communicable and non-communicable diseases puts tremendous strain on a country's health systems [7]. In addition, the growing burden of CVD threatens the macroeconomy and microeconomy of LMICs. Early mortality and disability represents a loss of a nation's productivity and negatively affects household economic conditions [8,9].

In Argentina, CVD, including cerebrovascular disease, has been the leading cause of death for both men and women over the last decade, with a mortality rate between 229 and 270 per 100,000 or approximately 30% of the total cause of mortality [10–13]. In Argentina, low income accompanied by the lack of private or social health care insurance coverage was associated with a higher risk of impoverishment after a CVD event (odds ratio [OR] = 4.72; 95% confidence interval [CI] 2.56–8.76; P < 0.01) and a significantly higher use of distress financing (e.g., borrowing money from relatives/friends, taking loans from banks/other lenders, or selling assets) (OR = 3.08; 95% CI 1.12–8.43; P < 0.01) [14]. The Argentinean health care system is divided into three sectors: public, social insurance ("Seguridad Social" in Spanish), and private [15]. The public health care sector (public sector) provides health care services free of charge, regardless of insurance status, and is financed mainly through tax revenues. Although policies are determined by the Federal Ministry of

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Health for the public sector, the public sector is decentralized and has a limited role in national health policy administration. Forty-four percent of the country's population receives health care services from the public sector. The social health care sector provides health care coverage to approximately 45% [16] of the population and is formed by worker unions and financed through compulsory contributions from employees and employers. The social health care sector has its own hospitals and clinics or it makes arrangements with private health care providers to allow its patients to access care from specific health care centers, clinics, and hospitals. Similar to private insurance in other countries, the private insurance health care sector in Argentina consists of prepaid medical plans, allowing patients to seek health care at private health care facilities, and is accessed by about 10% of the population [17]. Because both the social health care sector and the private insurance health care sector are financed through private funds, they will be referred to as one health sector in this article and would be denoted as the "social/private sector." Although only about half of the population has access to social/private sector care, almost 80% of Argentina's health care expenditure is channeled through this sector. Examination of outcomes according to the health care sector in Argentina has not been previously explored [15].

Evaluations of outcomes for patients diagnosed with CVD are needed to identify major determinants associated with impoverishment that can be targeted for interventions and preventative treatment strategies. Despite the significance of CVD in Argentina, there is a dearth of population-based research on mortality and morbidity outcomes impacting individuals at the household level, functionality and productivity changes after a CVD event, and outcome evaluations according to the health care service provider accessed. Long-term consequences of CVD-related events, such as functionality and productivity changes, may influence disease progression as well as individual and societal economic well-being.

The purpose of this study was to explore the impact of CVD on physical function and productivity and to understand outcomes according to the health care (public or private/social) used for medical attention for a CVD event.

Methods

Study Design

The study was a secondary analysis of data gathered in Argentina as part of a multicountry, cross-sectional survey assessing the microeconomic impact of CVD events resulting in hospitalization [14]. The study was approved by local ethics boards for each recruitment site in Argentina. Signed informed consent was obtained from each participant.

Selection of Hospitals, Sample Size, and Participant Recruitment

Inclusion criteria for hospital recruitment sites included having specialized cardiology and neurology services and providing care to patients with a range of socioeconomic status. The Province of Buenos Aires has nearly 50% of the country's total population and includes the Ciudad Autónoma de Buenos Aires, the largest city in the country. Three public sector and four social/private sector hospitals met the criteria and were included as recruitment sites for this study. An estimated sample size of about 500 participants from each country was calculated on the basis of detecting a 20% difference between economic groups, an α of 0.05, and a power of 90%. The Argentinean cohort sample consisted of 431 participants. Participant recruitment was performed using a stratified random-sampling process on the basis of age (<55 years old and ≥55 years old) from seven hospitals [14]. Participants were recruited if they had been hospitalized because of one or more of the following diagnoses: acute coronary syndrome (including unstable angina or myocardial infarction), stroke, acute heart failure, or peripheral vascular intervention (including amputation). Exclusion criteria were any of the following: active malignancy, end-stage renal disease requiring dialysis, solid-organ or hematopoietic transplant, HIV infection, or severe mental illness.

Data Collection and Analysis

Survey data were collected in the outpatient clinic or in the household by trained personnel. Health care personnel were trained by research staff in person, with written protocols, and by providing ongoing feedback after the survey data were reviewed by the research staff. Data were obtained from participants using a questionnaire at 3 to 15 months after the CVD-event–related hospitalization. The standardized surveys were developed by experts from the Initiative for Cardiovascular Health Research in Developing Countries and translated from English into the local language and culturally adapted by country sites. The questionnaire items included baseline demographic characteristics, socioeconomic conditions, comorbidities, and types of interventions, expenditures, and functionality and productivity changes associated with the CVD event(s). Specific items within the survey related to physical function were adapted from the 36-item short form health survey [18]. Questions from the 36-item short form 36 focusing on functionality and productivity had three- or five-point scales. For example, health status was rated as *excellent* (1), *very good* (2), *good* (3), *fair* (4), or *poor* (5).

For analysis, functionality and productivity rating scales were dichotomized into two groups, "affected" (participant ratings of fair and poor) and "not affected" (rating of excellent, very good, or good), to distinguish individuals who had diminished functionality or productivity post-CVD event. To assess the differences by health care sector, respondents were stratified according to the health care institution from which they received treatment for the CVD event: the social/private sector or the public sector. Comparisons were conducted to assess differences by group in participants' functionality and productivity. Continuous variables, such as age, were reported as means ± SDs and categorical variables, such as sex, as proportions (%). Continuous variables were analyzed using analysis of variance and categorical variables using chi-square tests. Univariate and multivariate logistic regressions were used to analyze the determinants of productivity loss associated with a CVD event. Multivariate models were constructed using variables found to be significant ($P < 0.1$) in the univariate models. Sample representativeness was evaluated by comparing survey data with those from a nationally representative survey, the Encuesta de Utilización y Gastos en Servicios de Salud [19].

Definitions

Functionality was defined as the ability to perform daily activities needed to maintain personal well-being, such as walking, walking briskly, or walking up the stairs [18]. *Productivity* was defined as an individual's physical and mental capabilities needed to be productive in general, including for work-related activities [18].

Results

Table 1 presents the demographic characteristics, median household income, and tobacco use of the study population. Participants who sought care from a social/private sector institution tended to be older ($P = 0.02$), more likely to be married ($P < 0.01$),

Table 1 – Sociodemographic characteristics and comorbidities by health care coverage.

Variable	Social/private (N = 295)	Public (N = 136)	P value
Sociodemographic characteristics			
Sex: Male	209 (70.8)	108 (79.4)	0.06
Age (y), mean ± SD	57.15 ± 8.7	55.16 ± 7.7	0.02*
Married	199 (67.5)	53 (39)	<0.01*
Head of household	219 (74.2)	107 (78.7)	0.30
Years of education, mean ± SD	9.8 ± 8.4	7.8 ± 4.1	<0.01*
Comorbidities before CVD event			
Hypertension	163 (55.3)	77 (56.6)	0.43
Diabetes	57 (19.3)	23 (16.9)	0.32
Depression	38 (12.9)	20 (14.7)	0.35
COPD	5 (1.7)	6 (4.4)	0.09
No comorbidities	13 (4.4)	0	<0.01*
Tobacco use			
Tobacco use before CVD event	158 (53.9)	85 (63.0)	0.07
Current tobacco use	30 (10.3)	23 (16.9)	0.03*
Family members who stopped smoking after CVD event	25 of 129 (19.4)	12 of 52 (23.1)	0.04*
Income/expenditures (AR$), mean ± SD			
Monthly individual income	1441.58 ± 1610.03	844.95 ± 1076.27	<0.01*
Household tobacco spending before CVD event	84.92 ± 119.61	97.95 ± 134.26	0.24
Current household tobacco spending	26.76 ± 72.17	27.56 ± 79.49	0.77

Note. Values are n (%) unless otherwise indicated.
AR$, Argentine peso; COPD, chronic obstructive pulmonary disease; CVD, cardiovascular disease.
* Significance set at <0.05.

and had higher mean years of education ($P < 0.01$) than those who received attention from a public sector institution. No significant differences were found for the sex ($P = 0.06$) or head of household ($P = 0.30$) variable. Economic distribution and impact have been detailed previously [14].

Sample Representativeness

Population sample representativeness was evaluated by comparing the study sample data with results from the National Survey of Utilization and Spending in Healthcare Services (Encuesta de Utilización y Gastos en Servicios de Salud in Spanish) [19]. This national survey was conducted in 2005 in all country regions with a probability, multistage, and stratified sampling strategy. The survey measured inequalities in health care coverage and health care use and identified select chronic diseases. Acute myocardial infarction was the only CVD focus and major contributing factor identified by this survey. No statistical differences were found between our study population and the results from the national survey for any of the variables evaluated (married, head of household, private/social health insurance, mean age, mean

years of education, and monthly income in Argentine peso [$]), supporting the representativeness of our study findings.

Comorbidities, Risk Factors, and Economic Impact

More than half of the patients reported having hypertension before the CVD event and 18.6% reported a diagnosis of diabetes. Tobacco use before the CVD event was reported by more than 50% of the participants in both groups ($P = 0.07$). A higher percentage of individuals in the public sector group reported continued tobacco use post-CVD event compared with those in the social/private sector group (public sector 30% vs. social/private sector 23%; $P = 0.03$). The monthly individual income in Argentine peso ($) was higher in the social/private sector cases ($1442) than in the public sector cases ($845) (US $473 vs. US $276; $P < 0.01$).

Diagnosis, Interventions, and Length of Hospital Stay

Table 2 presents the patterns of clinical presentation. The sample consisted of 67.1% patients admitted for an acute coronary syndrome and 20.0% for a stroke. No significant differences were

Table 2 – Clinical presentation and days of hospitalization by health care coverage.

Variable	Social/private (N = 295)	Public (N = 136)	P value
Clinical presentation, n (%)			
Acute coronary syndrome	192 (65.1)	97 (71.3)	0.12
Cerebrovascular disease	62 (21)	24 (17.6)	0.24
Heart failure	33 (11.2)	21 (15.4)	0.13
Peripheral vascular disease	7 (2.4)	1 (0.7)	0.22
Hospitalization			
Number of days hospitalized, mean ± SD	10.8 ± 12.79	14.07 ± 14.09	<0.01*

* Significance set at <0.05.

Table 3 – Diagnostic procedures and treatment during hospitalization and follow-up treatment by health care coverage.

Variable	Social/private	Public	P value
	(N = 295)	(N = 136)	
Diagnosis and treatment during hospital stay, n (%)			
Medication	273 (92.5)	126 (92.6)	0.57
Echocardiogram	152 (51.5)	88 (64.7)	<0.01*
Angioplasty	99 (33.6)	32 (23.5)	0.02*
Angiogram	47 (16.0)	59 (43.4)	<0.01*
Neuroimaging	61 (20.7)	7 (5.1)	<0.01*
Bypass surgery	29 (9.8)	23 (16.9)	0.02*
Thrombolysis	7 (2.4)	9 (6.6)	0.02*
Pacemaker	5 (1.7)	1 (0.7)	0.38
Amputation	1 (0.3)	0	0.68
Ambulatory follow-up, n (%)	(N = 293)	(N = 136)	P value
Take all medicines	260 (88.8)	109 (80.1)	<0.01*
Reasons for not taking medicines, n (%)	(N = 32)	(N = 26)	P value
Too expensive	25 (78.1)	19 (73.0)	0.05*
Availability	2 (6.2)	4 (15.4)	0.08
Forgot	4 (12.5)	2 (7.7)	0.61
Do not want	1 (2.8)	1 (3.8)	0.53

* Significance set at <0.05.

found between groups for clinical patterns of CVD presentation. The average length of hospitalization was longer for those who sought public sector care than for those who sought social/private sector care (14.09 days vs. 10.8 days; $P < 0.01$). Individuals treated in the public sector reported higher rates of angiography (public sector 43.4% vs. social/private sector 16%; $P < 0.00$), bypass surgery (public sector 16.9% vs. social/private sector 9.8%; $P = 0.02$), and thrombolysis (public sector 6.6% vs. social/private sector 2.4%; $P = 0.02$). In comparison, those who sought social/private sector care reported higher rates of angioplasty (social/private sector 33.6% vs. public sector 23.5%; $P = 0.02$). After hospitalization, a higher proportion of public sector patients

reported difficulties in taking medications as prescribed (social/private sector 88.8% vs. public sector 80.1%; $P < 0.01$), which was reported primarily as being due to economic reasons (Table 3).

Functionality and Productivity Effects

More than 30% of patients in both groups reported a *change for the worse* in their health state post-CVD event ($P = 0.35$). No statistical differences existed between the groups for ability to perform *vigorous* activities ($P = 0.25$). Almost 60% reported suffering *change for the worse* while performing *vigorous* activities (Table 4). The public sector group reported significantly higher ratings of

Table 4 – Patient functionality and productivity by health care coverage.

15 mo after CVD event	Social/private (N = 295)	Public (N = 136)	P value
Self-rated health, n (%)			
Excellent, very good, and good	202 (68.5)	87 (64.0)	0.35
Fair and poor	93 (31.5)	49 (36.0)	
Vigorous activities			
Excellent, very good, and good	124 (42.0)	49 (36.0)	0.25
Fair and poor	171 (58.0)	87 (64.0)	
Moderate activities			
Excellent, very good, and good	188 (63.7)	72 (52.9)	0.03*
Fair and poor	107 (36.3)	64 (47.2)	
Decrease in work time			
A lot and a little	206 (69.8)	115 (84.6)	<0.01*
Did not decrease	89 (30.2)	21 (15.4)	
Limited work activities			
A lot and a little	218 (74.1)	123 (90.4)	<0.01*
Did not decrease	76 (25.9)	13 (9.6)	
Feeling limited[†]			
A lot and a little	184 (62.6)	112 (82.4)	<0.01*
Did not decrease	110 (37.4)	24 (17.6)	

CVD, cardiovascular disease.
* Significance set at <0.05.
[†] One value is missing for social/private.

Table 5 – Univariate and multivariate logistic regression models for *decreasing a lot the working time*.

Variable	Univariate analysis, OR (95% CI)	P value	Multivariate analysis, OR (95% CI)	P value
Sociodemographic characteristics				
Head of household	0.50 (0.35–0.80)	<0.01[*]	Not in final model	NA
Income	0.99 (0.99–0.99)	<0.01[*]	0.99 (0.99–0.99)	<0.01[†]
Social/private coverage	0.50 (0.30–0.70)	<0.01[*]	0.55 (0.35–0.85)	0.01[†]
Studied ≥7 y	2.01 (1.35–2.95)	<0.01[*]	Not in final model	NA
Clinical presentation and treatment				
Acute coronary syndrome	0.65 (0.45–0.95)	0.03[*]	Not in final model	NA
Cerebrovascular disease	1.80 (1.10–2.91)	<0.01[*]	2.55 (1.42–4.60)	<0.01[†]
Angioplasty	0.60 (0.40–0.90)	0.01[*]	Not in final model	NA
Days of hospitalization	1.03 (1.01–1.05)	<0.01[*]	Not in final model	NA
Did not take all medicines (too expensive)	3.50 (1.75–6.95)	<0.01[*]	Not in final model	NA
Functionality and productivity				
Vigorous activities: much worse	5.80 (3.65–9.15)	<0.01[*]	Not in final model	NA
Moderate activities: much worse	9.2 (4.6–18.05)	<0.01[*]	Not in final model	NA
Moderate activities: the same	0.30 (0.20–0.45)	<0.01[*]	Not in final model	NA
Feel limited a lot	26.4 (15.80–44.05)	<0.01[*]	Not in final model	NA
Did not feel limited	0.14 (0.08–0.25)	<0.01[*]	Not in final model	NA

CI, confidence interval; NA, not available; OR, odds ratio.

[*] Significance set at <0.1.

[†] Significance set at <0.05.

decreased ability to perform moderate activities compared with the social/private sector group (47% vs. 36%; P = 0.03).

Although the impact of CVD on patients' *time spent at work* was considerable for both groups, patients treated in the public sector reported a significantly higher rate of being able to spend *much less time* at work after the CVD event (84% vs. 70%; P < 0.01).

Limitations in the type of work-related activities were also significantly different between the groups. The public sector group reported significantly higher rates of both being *a lot* and *a little limited* in the type of work activities (90% vs. 74%; P < 0.01).

Participants attended to in the public sector also reported higher rates of *feeling limited*, that they could *do less than what they would like*, and higher rates of suffering from emotional problems such as depression or anxiety.

Logistic Regression Results

A multivariate logistic regression model was constructed using significant variables (P < 0.1) from the univariate model (Table 5). The outcome variable used was *reduced by a lot the time able to work*. Variables were introduced in a stepwise fashion into the model. The predictive model was constructed with variables significant at the P ≤ 0.05 level. Many variables that reached significance in the univariate model did not reach levels required for inclusion in the predictive model, including being head of household (OR = 0.50; 95% CI 0.35–0.80; P < 0.01), angioplasty (OR = 0.60; 95% CI 0.40–0.90; P = 0.01), not taking prescribed medicines (OR = 3.50; 95% CI 1.75–6.95; P < 0.01), and the ability to perform vigorous activities *much less* (OR = 2.55; 95% CI 3.65–9.15; P < 0.01). After controlling for significant variables (see Table 5), cerebrovascular disease was significantly associated with reducing the time able to work by *a lot* (OR = 2.55; 95% CI 1.40–4.60; P < 0.01). Having access to social/private sector health care (OR = 0.55; 95% CI 0.35–0.90; P = 0.01) and patient income (OR = 0.99; 95% CI 0.99–0.99; P < 0.01) were both significantly and inversely associated with reducing the time able to work by *a lot*.

Discussion

To our knowledge, this is the first report to evaluate changes in patient-reported functionality and productivity after being hospitalized for a CVD-related event at a public or social/private hospital in Argentina. In general, there is a lack of research in this area. Participants who reported not having health insurance and who sought health care at public hospitals had a significantly higher impact on morbidity and work-related limitations. Patients with a CVD event who sought care from public health care hospitals were younger than patients with health care insurance, had fewer economic resources, were less educated, and presented with more difficulty in recovering. Most of the patients in the study reported being the head of household, which could represent a significant loss of resources to the labor force and to the household economies. Inability or decreased capacity to work can lead to a higher risk of impoverishment for individuals and their family.

Although no differences were found between the groups on clinical patterns of CVD presentation, patients who were treated in the public sector reported longer average length of hospitalization. The reason for this finding is unclear, but may be attributed to higher rates of bypass surgeries performed in the public sector, worse clinical presentation at admission, or delayed medical attention for those who sought public sector care. The social/private sector group had significantly higher rates of angioplasty, possibly reflecting a lack of access within the public sector to effective but costly interventions, such as angioplasty with stent placement. Consistent with the findings in this study, Gagliardi et al. [20] reported that 32.4% of CVD cases in Argentina received angioplasty in 2005. They, however, also reported a higher rate of cases (22.5%) who received thrombolytic therapy in contrast to less than 10% in this study.

Although both groups of patients with CVD reported taking all prescribed medications, the public sector group had significantly higher rates of patients with no access to prescribed medicines, which they reported was due to the high cost of medication. In Argentina, the public sector covers medication at 100% free of charge during hospitalization, but in this study it was found that public sector pharmacies did not consistently provide prescribed medication free of charge during the follow-up visits. Patients reported having to use out-of-pocket money to cover these costs. Additional costs were reported for transportation for a patient or

for a family member accompanying the patient for care. In a longitudinal study, severely hypertensive men lost 2.6 more years of work than did normotensive men and 90% of the calculated economic costs were identified as indirect productivity losses [21]. Other studies have highlighted that to establish priorities for funding health programs, particularly in limited health care resource contexts, estimates of the economic burden imposed by CVD are needed [10,22].

In our study, there were high rates of patients rating their health state as "fair" or "poor" after a CVD event, with almost 60% reporting difficulties in performing *vigorous* activities. Functionality and productivity impact after a CVD event was significantly higher for those who sought care from the public sector institutions, with higher rates of disability for *moderate* activities, decrease in the *time able to work*, and limitations on the type of work activities due to emotional problems. Emotional problems, such as depression and anxiety, were identified as prognostic factors for cardiac mortality after a myocardial infarction or found to be predictors of quality of life [23,24].

Individuals suffering a CVD event had significant impacts on *time able to work* if they did not have health insurance or if they belonged to a lower income group. In addition, the model showed that those who experienced a cerebrovascular disease event had an even greater impact on *time able to work*. Several studies conducted in Argentina on the impact of acute myocardial infarctions found similar demographic characteristics and rates of common risk factors, such as hypertension and tobacco use [25,26]. Other observational studies conducted in Argentina identified hypertension as the main risk factor for stroke events [27,28].

Study findings contribute to the public health literature on CVD by exploring how outcomes can vary depending on which health care service is accessed. This is especially important in LMICs with public health care institutions and growing private health care systems. Findings can be used to inform policymakers, public health prevention strategies, treatment guidelines, and follow-up interventions to address the burden of CVD in Argentina or other counties with similar health care systems.

Study Limitations

Important limitations of this study should be considered. First, this study was a secondary analysis of a cross-sectional design study that precludes inferring any causal relationships between variables. Nonetheless, the survey captured important functionality and productivity outcomes that were not reported in the multicountry report. Second, the ratio of participants in this study accessed the health care sectors at different rates than that noted at the national level. We, however, assessed multiple characteristics of participants in our cohort study compared with the countrywide survey and found no significant differences supporting the likelihood of a representative sample. Third, the study design included a hospital-based sample, did not include patients who died because of a CVD event during or after hospitalization (most severe CVD cases) or those who avoided seeking care for a CVD event, and relied on patient interviews rather than hospital records. Therefore, these factors limited the ability to define, for example, the severity of vascular heart disease and to verify all possible treatment procedures received. There may be other variables impacting functionality and productivity that were not evaluated. Different percentages of angioplasty and bypass surgery were found in both groups of patients. Angioplasty, compared with bypass surgery, is less stressful, and this could have influenced patients' reporting of functionality and productivity. Fourth, data on the use of and adherence to post-CVD event rehabilitation services were not collected. All hospitals included in this study offered acute rehabilitation services, but the adherence rates to these services

are unknown. Therefore, we do not know whether some of the differences in outcomes could be due to differences in provision and use of and adherence to rehabilitation services among patients from public and private hospitals. Pasca et al. [29] found that secondary prevention guidelines are not assessed and/or are not adequately executed in Argentina. They evaluate the first local multicenter program (Heart Care Network Argentina) that aims to control CVD risk factors after the occurrence of a CVD event. On a particular subsample of this network, they found high adherence rates.

Last, patients were interviewed within 3 to 15 months after a CVD-event–related hospitalization. Given the time lapse, emotional state, working capacity, and possibly other variables apart from CVD-related variables could have influenced the reporting of functionality and productivity changes.

Conclusions

Study findings advance knowledge of CVD impact on functionality and productivity, demonstrating that among patients in the cohort all experienced a significant functionality and productivity loss after a CVD event. Nevertheless, those who received care at public health care institutions were more significantly impacted. Furthermore, the lack of insurance, lower income, and cerebrovascular disease were the major determinants of functionality and productivity loss. CVD is the leading cause of death in Argentina. As its prevalence increases, workforce capacity and potential economic growth could be directly affected. Public health prevention policies are needed to avoid or postpone the onset of CVD and to adequately treat CVD event morbidity outcomes. Recommendations for future research in this area include further evaluation of functionality and productivity outcomes while exploring other confounding variables, and using primary hospital-based data and other cohorts. Attention to changes in functionality and productivity outcomes may reveal insight into how to improve posthospitalization care and better inform primary, secondary, and tertiary preventative strategies.

Acknowledgments

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