

Impact of the COVID-19 pandemic on catheterization laboratory procedural volumes at a tertiary cardiac centre in a low- & middle-income country in South Asia

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Background: Globally, reports have suggested that cardiac catheterization procedures, particularly elective coronary procedures declined as a result of the COVID-19 pandemic. However, there is scarce data on this aspect, in terms of a South Asian low- & middle-income country (LMIC) setting.

Purpose: We aimed to evaluate temporal trends and impact of the pandemic on elective and emergency cardiac catheterization procedural volumes at a high-volume tertiary cardiac centre in a LMIC.

Methods: Data on both emergency and elective catheterization procedures, including coronary angiography, percutaneous coronary intervention (PCI), peripheral angiography, pacing & electrophysiology (EP) were collected from January to December 2020, and compared with corresponding data for the same months in 2019. Data were obtained from hospital's catheterization laboratory database. The difference was expressed as a percentage (%Δ). Data for each quarter were compared using paired t-test. A p value <0.05 was considered significant.

Results: Overall, a significant (32.4%) reduction of cath lab procedures was seen in 2020, as compared with 2019 (p=0.006). There were significantly reduced numbers of coronary angiographies (%Δ -31.4%; p=0.009), PCI (%Δ -32.2%; p=0.008), peripheral procedures (%Δ -69.9%; p=0.001) and pacing & EP procedures (Δ-48.7%; p=0.001) in 2020, as compared with 2019 (Table 1 & Figure 1). For coronary pro-

cedures this was most marked in 2nd and 3rd quarters of 2020 (p<0.05). The greatest deficits for coronary angiographies were observed in April 2020, compared to 2019 (Δ -85.1%); the greatest reductions in PCI (Δ-87.7%) and pacing & EP (Δ -94.7%) were seen in May 2020, coinciding with the nation-wide lockdown measures. Coronary procedures showed a gradually increasing trend since July 2020. Given their elective nature, no peripheral procedures were performed from April to July 2020. In terms of PCI, there was a significant reduction in elective procedures in the 2nd quarter of 2020 (p=0.001), with a steep "catch-up" incline in September (Δ +2.9%) and October 2020 (Δ -8.3%), coinciding with availability of in-hospital COVID19 screening tests (Table 1). Among ad hoc PCI for acute coronary syndrome (ACS), although a 32.3% reduction was seen overall (p=0.108), a significant decrease was only observed in the 2nd quarter. Ad hoc PCI for non-ACS was significantly reduced throughout 2nd to 4th quarters of 2020. In line with national guidelines preferring fibrinolysis as first-line for STEMI, as well as absence of negative pressure ventilation cath labs and unavailability of rapid-screening COVID test kits, no primary PCI procedures were performed since May 2020.

Conclusion: The impact of COVID-19 resulted in a significant reduction in all cardiac catheterization procedures in 2020, as compared with 2019. This reduction was most marked for coronary procedures in the 2nd and 3rd quarters of 2020, with a significant reduction in elective procedures.

Total percutaneous coronary interventions (elective & ad hoc): comparison for 2019 vs 2020

	Elective				Ad-hoc								
				P-value	ACS			P-value	Non-ACS			P-value	
	2019	2020	%		2019	2020	%		2019	2020	%		
q1	Jan	29	27	-6.9%	0.144	98	123	25.5%	0.846	54	62	14.8%	0.217
	Feb	41	21	-48.8%		84	109	29.8%		39	63	61.5%	
	Mar	44	26	-40.9%		84	82	-2.4%		87	41	-52.9%	
q2	Apr	36	5	-86.1%	0.001	84	27	-67.9%	0.012	54	9	-83.3%	0.008
	May	33	5	-84.8%		85	9	-89.4%		36	5	-86.1%	
	Jun	31	3	-90.3%		90	29	-67.8%		42	7	-83.3%	
q3	Jul	38	8	-78.9%	0.250	97	49	-49.5%	0.114	31	27	-12.9%	0.013
	Aug	26	12	-53.8%		78	46	-41.0%		51	35	-31.4%	
	Sept	34	35	2.9%		95	53	-44.2%		56	35	-37.5%	
q4	Oct	36	33	-8.3%	0.833	112	81	-27.7%	0.548	66	55	-16.7%	0.043
	Nov	30	23	-23.3%		91	73	-19.8%		42	54	28.6%	
	Dec	23	30	30.4%		107	67	-37.4%		40	58	45.0%	
Total	401	228	-43.1%	0.003	1105	748	-32.3%	0.108	598	451	-24.6%	0.008	

Table 1