

Capacity for the management of kidney failure in the International Society of Nephrology Africa region: Report from the 2023 ISN Global Kidney Health Atlas (ISN-GKHA)

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Table S1. Burden of chronic kidney disease risk factors in the ISN Africa region.⁴⁰

Country	Obesity % (95% CI)	Increased BP % (95% CI)	Smoking % (95% CI)
Global, median [IQR]	21.9 [7.8-26.6]	24.8 [20.8-28.5]	13.1 [7.8-20.1]
Africa, median [IQR]	7.7 [5.8-12.2]	28.4 [26.7-29.8]	6.3 [4.7-8.8]
Algeria	26.6 (21.7 - 32.0)	25.1 (19.4 - 31.5)	10.3 (8.4 - 12.5)
Angola	6.80 (4.20 - 10.3)	29.7 (22.1 - 38.3)	6.7 (5.6 - 8.0)
Benin	8.20 (6.00 - 10.8)	27.7 (21.7 - 34.2)	4.1 (3.30 - 5.0)
Botswana	16.1 (12.3 - 20.3)	29.6 (23.4 - 36.4)	11.1 (9.40 - 13.0)
Burkina Faso	4.50 (3.10 - 6.30)	32.6 (25.3 - 40.1)	7.5 (5.90 - 9.5)
Burundi	4.40 (2.80 - 6.60)	29.2 (22.0 - 37.7)	4.7 (3.70 - 5.8)
Cabo Verde	10.6 (7.50 - 14.0)	29.5 (22.6 - 36.8)	5.6 (4.30 - 7.1)
Cameroon	9.50 (7.10 - 12.2)	24.8 (18.8 - 31.8)	4.4 (3.60 - 5.3)
Chad	4.80 (3.30 - 6.80)	32.9 (25.7 - 40.6)	5.2 (4.1 - 6.5)
Congo, Dem. Rep.	5.60 (3.70 - 8.00)	28.5 (21.1 - 36.5)	6.3 (5.5 - 7.3)
Congo, Rep.	8.40 (5.80 - 11.5)	26.2 (19.1 - 34.3)	5.5 (4.6 - 6.7)
Cote d'Ivoire	9.00 (6.70 - 11.9)	27.2 (20.7 - 34.2)	7.3 (6.1 - 8.7)
Djibouti	12.2 (8.60 - 16.7)	26.8 (19.5 - 35.0)	11.4 (9.5 - 13.5)
Egypt	31.1 (26.7 - 35.5)	25.0 (19.8 - 30.6)	16.0 (14.4 - 17.8)
Eritrea	4.10 (2.60 - 6.00)	29.1 (22.3 - 36.3)	5.1 (4.0 - 6.4)
Ethiopia	3.60 (2.30 - 5.20)	30.3 (23.1 - 38.0)	3.1 (2.4 - 3.8)
Gabon	13.4 (9.50 - 18.1)	25.5 (18.4 - 33.7)	8.3 (7.0 - 9.8)
Gambia	8.70 (6.30 - 11.6)	29.1 (22.5 - 36.4)	8.9 (7.4 - 10.4)
Ghana	9.70 (7.50 - 12.2)	23.7 (18.7 - 29.3)	2.5 (2.0 - 3.1)
Guinea	6.60 (4.60 - 8.90)	30.3 (23.7 - 37.4)	3.8 (2.9 - 4.8)
Kenya	6.00 (4.30 - 8.20)	26.7 (20.2 - 34.0)	6.7 (6.5 - 7.0)
Liberia	8.60 (6.20 - 11.4)	28.3 (22.2 - 35.2)	4.5 (3.8 - 5.4)
Libya	31.8 (26.5 - 37.4)	23.7 (18.0 - 29.8)	13.0 (11.3 - 15.0)
Madagascar	4.50 (2.90 - 6.40)	28.1 (21.4 - 35.4)	9.2 (7.6 - 11.0)
Malawi	4.70 (3.20 - 6.50)	28.9 (22.1 - 36.3)	6.1 (5.1 - 7.3)
Mali	7.10 (5.10 - 9.60)	32.6 (25.4 - 40.4)	4.9 (4.10 - 6.0)
Mauritania	11.3 (8.30 - 14.9)	31.7 (24.3 - 40.0)	8.5 (6.7 - 10.8)
Mauritius	11.5 (8.4 - 15.2)	25.0 (18.9 - 31.9)	15.8 (13.6 - 18.2)
Morocco	25.6 (20.7 - 30.9)	26.1 (20.0 - 32.9)	8.3 (6.8 - 10.0)
Mozambique	6.00 (4.10 - 8.20)	29.1 (22.2 - 36.6)	7.8 (6.5 - 9.3)
Namibia	15.0 (11.5 - 18.7)	28.5 (22.3 - 35.0)	10.4 (8.9 - 12.2)
Niger	4.70 (3.20 - 6.70)	33.4 (25.9 - 41.4)	4.0 (3.2 - 4.9)
Nigeria	7.80 (5.90 - 9.90)	23.9 (18.7 - 29.5)	2.9 (2.3 - 3.6)
Rwanda	4.80 (3.20 - 6.70)	26.7 (19.7 - 34.3)	6.3 (5.3 - 7.4)

Country	Obesity % (95% CI)	Increased BP % (95% CI)	Smoking % (95% CI)
Senegal	7.40 (5.20 - 9.90)	30.2 (23.0 - 38.0)	4.4 (3.7 - 5.3)
Sierra Leone	7.50 (5.30 - 10.1)	30.3 (23.4 - 37.2)	10.9 (9.3 - 12.8)
Somalia	6.90 (4.50 - 9.80)	32.9 (25.2 - 41.3)	6.0 (4.9 - 7.5)
South Africa	27.0 (23.4 - 30.8)	26.9 (21.7 - 32.7)	14.6 (13.9 - 15.3)
Sudan	-	-	1.0 (0.7 - 1.5)
Swaziland	13.5 (10.0 - 17.5)	29.8 (23.3 - 37.0)	4.7 (4.0 - 5.5)
Tanzania	7.10 (5.30 - 9.40)	27.3 (21.4 - 33.8)	6.9 (5.9 - 8.0)
Togo	7.10 (4.90 - 9.70)	28.9 (22.4 - 35.8)	3.9 (3.2 - 4.7)
Tunisia	27.3 (22.4 - 32.1)	23.2 (17.7 - 29.0)	19.9 (17.3 - 22.7)
Uganda	4.10 (2.80 - 5.80)	27.3 (21.0 - 34.2)	5.2 (4.4 - 6.2)
Zambia	6.50 (4.60 - 8.80)	27.1 (20.8 - 34.1)	6.5 (5.2 - 8.0)
Zimbabwe	12.3 (9.40 - 15.6)	28.2 (21.6 - 35.7)	8.8 (7.9 - 9.9)

Abbreviations: ISN, International Society of Nephrology; CKD, chronic kidney disease; CI, confidence interval; DALYs, disability-adjusted life years; BP, blood pressure; Rep, Republic; Dem. Rep., Democratic Republic; IQR, interquartile range.

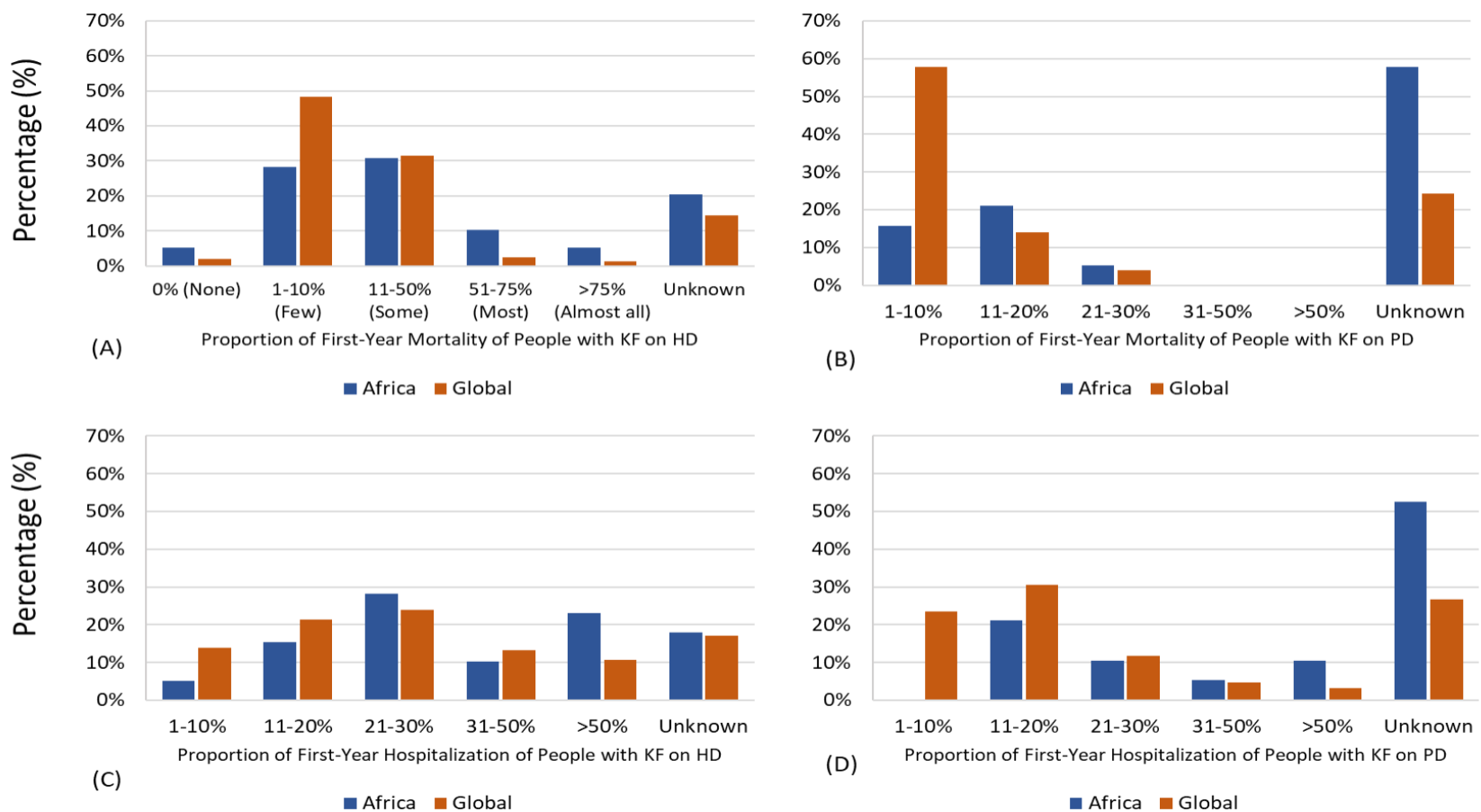
Figure S1. Workforce shortages for medical kidney care in the ISN Africa region.

Country	Nephrologists	Pediatric nephrologists	Transplant surgeons	Surgeons or Interventional	Surgeons or Interventional	Dietitians	Laboratory technicians	Radiologists (ultrasounds)	Vascular access coordinators	Counsellors/psychologists	Transplant coordinators	Dialysis nurses	Renal nurses	Dialysis technicians	Social workers	Palliative care physicians	Kidney supportive care nurses	Total shortage
Total	35	40	36	36	35	33	8	11	34	27	31	26	26	27	24	35	35	
Angola																		4
Benin																		14
Botswana																		15
Burkina Faso																		9
Burundi																		14
Cabo Verde																		7
Cameroon																		17
Central African Rep.																		16
Chad																		15
Congo, Dem. Rep.																		14
Congo, Rep.																		16
Cote d'Ivoire																		12
Egypt																		12
Ethiopia																		11
Gabon																		11
Gambia																		14
Ghana																		17
Guinea																		9
Kenya																		16
Lesotho																		2
Madagascar																		11
Malawi																		16
Mali																		16
Mauritania																		15
Mauritius																		15
Morocco																		3
Mozambique																		14
Namibia																		12
Niger																		15
Nigeria																		13
Senegal																		16
Somalia																		7
South Africa																		14
Sudan																		7
Swaziland																		16
Tanzania																		13
Togo																		14
Tunisia																		5
Uganda																		11
Zambia																		11
Zimbabwe																		10

ISN, International Society of Nephrology; Rep., Republic; Dem. Rep., Democratic Republic; HD, hemodialysis; PD, peritoneal dialysis, Rep., Republic

■ No shortage ■ Shortage ■ Unknown

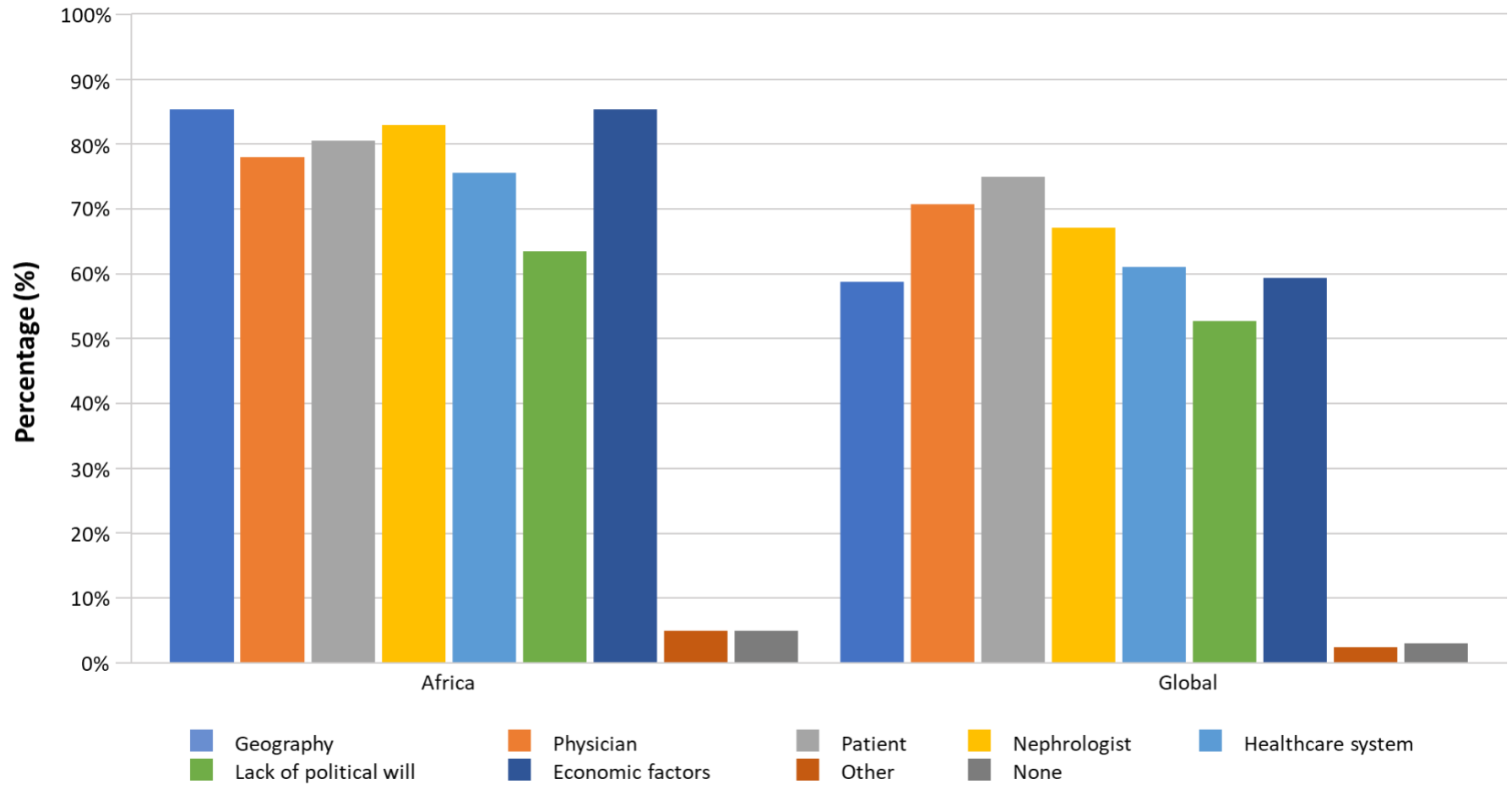
Figure S2. Outcomes (hospitalization and death) in people on dialysis in the ISN Africa region: (A) Proportion of people living with kidney failure on hemodialysis and die in the first-year; (B) Proportion of people living with kidney failure on peritoneal dialysis and die in the first-year; (C) Proportion of people living with kidney failure on hemodialysis and at least 1 hospitalization in the first-year; (D) Proportion of people living with kidney failure on peritoneal dialysis and at least 1 hospitalization in the first-year.*



Abbreviations: ISN, International Society of Nephrology; HD, hemodialysis; PD, peritoneal dialysis; KF, kidney failure

*Values represent absolute number of countries in each category expressed as a percentage of total number of countries

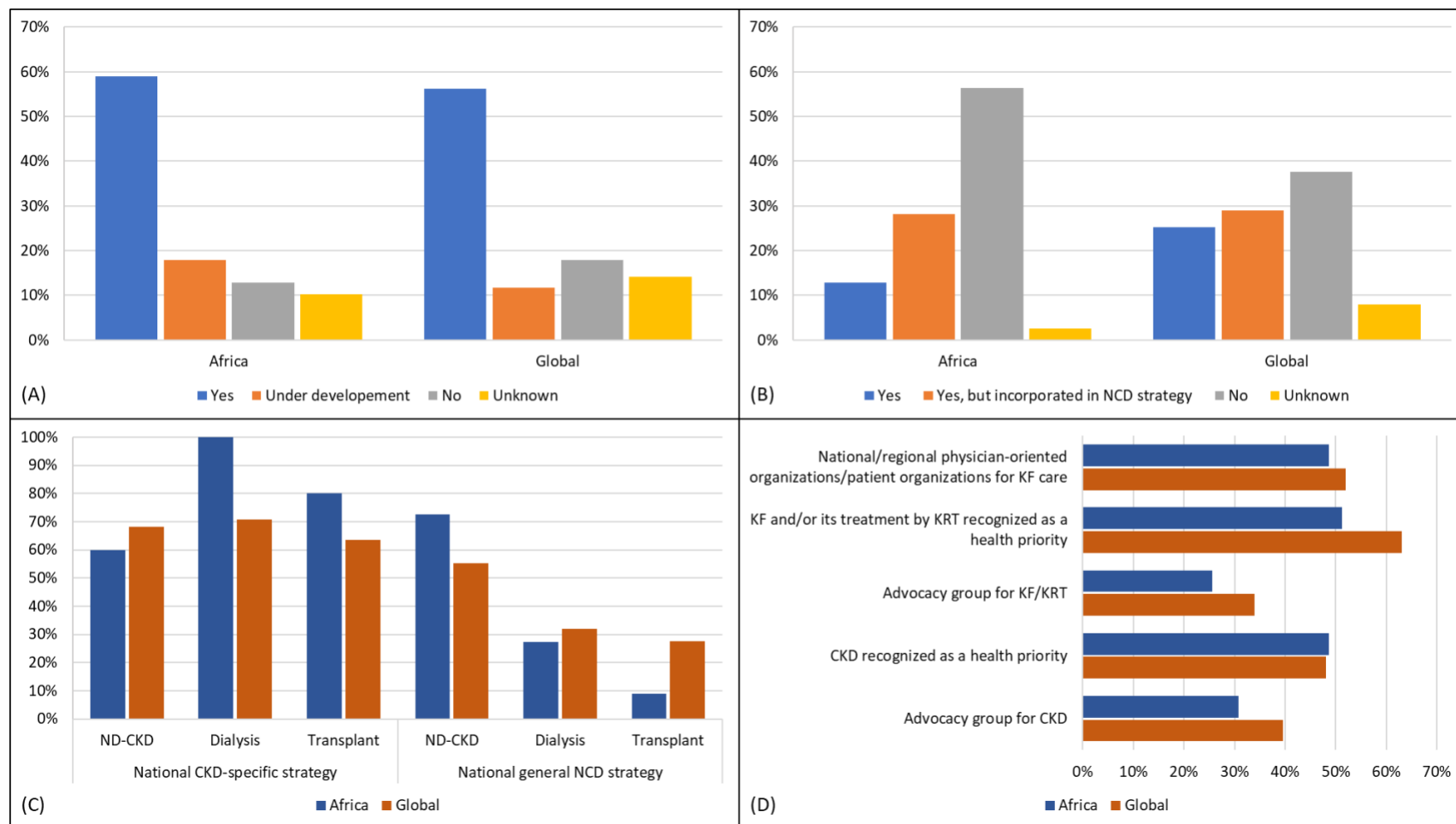
Figure S3. Barriers to optimum kidney failure care, globally and in the ISN Africa region.*



Abbreviations: ISN, International Society of Nephrology

*Values represent the absolute number of countries in each category expressed as a percentage of total number of countries

Figure S4. Strategies for advocacy efforts, globally and in the ISN Africa region: (A) National NCD strategy, (% of total number of countries responded); (B) National strategy for improved care, (% of total number of countries responded); (C) Population covered by national CKD specific strategy (% of total number countries responded 'Yes' in (B)), and general NCD strategy (% of total number countries responded 'Yes, but incorporated in NCD strategy' in (B)); (D) National advocacy for CKD.*



Abbreviations: ISN, International Society of Nephrology; NCD, non-communicable diseases; CKD, chronic kidney disease; KF, kidney failure; KRT, kidney replacement treatment; ND, non-dialysis
 *Values represent absolute number of countries in each category expressed as a percentage of total number of countries