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Review Article

Global Problem of Physician Dual Practices: A Literature Review

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Abstract

Background: Physician dual practices (PDP) is a term used to describe physicians who combine work in public and private health-care sector. This study aimed to find evidence of PDP worldwide, investigate its reasons and consequences, and compare high-income (HIC) versus low and middle-income countries (LMIC).

Methods: In this literature review, the search for PDP evidence was conducted in the English language. PubMed and Google were searched for relevant publications up to Sep 30, 2020.

Results: Of 195 countries, PDP-reports were found in 157 countries (81%). No significant difference in prevalence of PDP was found between HIC (77%) and LMIC (82%). Most common reason for working in private sector was low government salaries in public hospitals (55%). This was more reported in LMIC (65%) than HIC (30%; *P*<0.001). Most common reason for working in public sector was patient recruitment for private practice (25%). This was more reported in HIC (45%) than LMIC (16%; *P*<0.001). PDP were described as detrimental to public health-sector in 58% of country-reports. Most common adverse consequence was lower quality-of-care in public hospitals (27%). LMIC with PDP-reports had more severe corruption (*P*<0.001), lower current health-expenditure (*P*<0.001), and higher out-of-pocket expenditure (*P*<0.001) than HIC. Scale of PDP was common in more LMIC (92%) than HIC (60%; *P*<0.001). Government policies to address PDP did not differ significantly between HIC and LMIC.

Conclusion: PDP were present in most HIC and LMIC. In majority of reports a detrimental effect of PDP on public health-care was described.

Keywords: Physician dual practices; High-income countries; Low and middle-income countries

Introduction

Physician dual practices (PDP) is a term used to describe physicians who combine work in public and private health-care sector (1). These physicians generally combine salaried clinical work in public hospitals with fee-for-service clinical work in private practices (2). Adverse consequences of PDP may be physicians' lack of time and interest for patients in public sector, because they focus more on richer clientele in lucrative private sector. Hereby, PDP can result in absenteeism and a significant downfall in access and quality of health-care delivery to poor patients who are usually confined to

public sector (3-10). However, the impact of PDP on health-care provision to the general and poor population may differ across countries and is closely related to the organization of health-systems. In some countries, the role played by private health-care sector may be substantial, whereas in other countries it is minimal. PDP have been described in high-income countries (HIC) and low and middle-income countries (LMIC) (2).

In many LMIC physicians engage in PDP to supplement low government salaries (2,11). Absenteeism and lacking productivity in public sector have been broadly documented (11,12). Doctors may receive full-time government salaries for part-time work in public hospitals (12-15). Experienced doctors are most absent, which implies that their medical personnel gets less supervision (12-15). This financial mismanagement may lead to closed departments, delayed diagnostics and treatments, backlogs, underused medical equipment, waiting lists, prolonged hospitalizations, poorly educated staff, and ultimately negative patient outcomes (2, 11-16). Thus, PDP and absenteeism may importantly hinder the equal access and high quality of health-care services to patients in LMIC (2,11-16).

Although PDP not necessarily coexist with corruption, PDP are associated with the problem of corruption (12). Transparency International defines corruption as "abuse of entrusted power for private gain," and emphasizes that poor patients are particularly harmed by corruption as they often cannot afford private health-services (11-16).

Corruption is more prevalent in LMIC (12). Every year, the Corruption Perception Index ranks all nations on how corrupt their public sectors are perceived to be on a spectrum from 0 (highly corrupt) to 100 (very clean) (12,17). The score is lower than 50 in 91% of LMIC, whereas only 15% of HIC score below 50 (12,18).

Extent of corruption within a health-care system commonly reflects its society (11,12). Key-elements of corrupt health-care systems are: "Absent or failing monitoring systems for health-budgets, personnel, and supplies. No reward for good performance. No punishment for misconduct. Salaries for health-care providers in public hospitals are not in line with their educational background, skills, and training." This can result in PDP and absenteeism (12).

PDP are described in HIC too, despite the fact that monitoring systems, rewards, punishments and adequate government salaries are often in place (12,19). Although PDP exist everywhere, its extent, causes, kind and consequences might differ among various continents and countries. Most health-care systems can endure some corruption and PDP, but when it becomes the norm, its consequences can be harmful (19).

PDP can also have advantages. In many LMIC it offers doctors opportunities to earn proper incomes for their families. Without this opportunity, underpaid public personnel might prefer to migrate abroad, change to full-time private practice, or leave the health-sector completely. In addition, it reduces financial burden on governments to retain high-quality doctors in public hospitals without needing to raise their salaries. Working across sectors can further increase professional experience and satisfaction (4,20).

A recent global overview of available literature on PDP is lacking. Insight into differences and similarities of this phenomenon between HIC versus LMIC is missing as well. This information would be useful for government leaders, health-policy makers and hospital managers to design and implement regulatory mechanisms. This study aimed to find evidence of PDP worldwide, investigate its reasons and consequences, and compare HIC versus LMIC.

Methods

This literature review included scientific studies and official reports of good quality that clearly provide evidence of PDP taking place in well-defined countries. Excluded were documents that describe PDP in general, yet do not link the phenomenon to specific countries.

Search for PDP evidence was conducted in English language. We searched PubMed and Google for relevant publications up to Sep 30, 2020 with search-terms: ("physician dual practices") OR

("dual practices") AND/OR ("health-systems") AND/OR ("corruption") AND ("name of country" or "continent").

Selection of relevant data sources was based on whether the research matched our inclusion criteria. Titles and abstracts of identified documents were checked for eligibility and relevance against whether health-systems and PDP were addressed. Documents were fully read to check if PDP were directly linked to well-defined countries. If country-specific information of worthy quality was found, documents were included. If not, documents were excluded.

Subsequently relevant data addressing the pre-determined PDP characteristics were extracted from included studies and reports. Only characteristics directly linked to a certain country were abstracted and coded. To improve the validity of data and potentially reduce individual bias, all included documents were read, coded and endorsed by 3 authors. Bibliographies of useful documents were checked to find other relevant sources.

PDP characteristics investigated per country were: scale, source of evidence, used database, reasons for working in public and private sector, positive and adverse consequences, government policies to address it.

Scale of PDP was defined as: a) common; b) limited. Clear scale criteria were absent in all PDP-reports.

Government policies to address PDP were categorized as: a) banning; b) some restrictions; c) no restrictions. Category "some restrictions" was subdivided in: a) financial regulations; b) licensure regulations; c) promotion regulations.

All 195 countries were included and divided into two groups: those with or without PDP evidence. Following country characteristics were compared: World Bank Country Classification (18), population size (21), Corruption Perception Index-score (17), current health-expenditure (22-24), out-of-pocket expenditure (25,26), Universal Health Coverage (UHC) Index-score (27), Press Freedom Index-score (28,29), and Physician Density Index-score (21,30).

Data Analysis

Frequency distribution and median were computed using SPSS ver. 22 (IBM Corp., Armonk, NY, USA). Comparison of characteristics between countries were analyzed using chi-square, Fisher-exact, and Mann-Whitney-U test. Two-sided $P \leq 0.05$ was defined as statistically significant.

Results

Evidence of PDP worldwide

PDP were reported in all five inhabited continents. Fig. 1 and Table 1 show PDP per continent (1-4,6-8,10,16,21,31-152). Of 195 countries, PDP-reports were found in 157 countries (81%). PDP-reports stem from 47 of 61 HIC (77%) and 110 of 134 LMIC (82%; P=Ns).

Table 1: Reports of physician dual practices per continent

Continent	*Countries with PDP Reports* N/total n (%)	*Names of countries*
South-America	12/12 countries (100%)	Argentina(6,16,31),Bolivia(6,31),Brazil(6,31,32),Chile(31,33),Colombia(2,16), Ecuador(6,16),Guyana(34),Paraguay(35),Peru(1,2,4,6-8,16,36,37), Suriname(6),Uruguay(31),Venezuela(2)
Europe	39/44 countries (89%)	Albania(38),Andorra(39),Armenia(40,41),Austria(33,37,42-47),Belgium(33,48-51), Bosnia-Herzegovina(52),Bulgaria(53),Croatia(46,47,54),Cyprus(47,54), Czech-Republic(33,46,47,55,56),Denmark(4,33,44,46,47,57),Estonia(3,58),

		Finland(33,43,47,57,59),France(7,33,37,42,43,45,46,60),Germany(3,7,33,37,42,43,45), Greece(33,37,42,44-46,60), Hungary(33,46,61),Iceland(33,62),Ireland(21,33,37,43-46,57), Italy(1,3,10,33,37,42,43,45,57,60,63),Kosovo(64),Latvia(65-67),Lithuania(46,47), Macedonia(68-71),Malta(46,47,72,73), Montenegro(52,70,74),Netherlands(33,42,57,75,76), Norway(1,4,33,37,43,45,57,77,78),Poland(33,46,79),Portugal(1,2,4,33,37,42-45,63), Romania(46,80),Serbia(52),Slovakia(46,81-83),Slovenia(33,47,84,85),Spain(1,3,4,7,10,33,37, 42,43,45,46,57,63,86,87),Sweden(33,43,57,88,89),Switzerland(33,57),Ukraine(90-93),United Kingdom(1,3,4,7,8,10,33,37,42-45,52,57,60,87,94,95)
North-America	20/23 countries (87%)	Antigua&Barbuda(96),Bahamas(97),Belize(98,99),Canada(1,3,7,33,37,42,43,45,60,100),Costa Rica(2,16,101),Dominica(102),Dominican-Republic(2,16),El-Salvador(6),Grenada(103), Guatemala(98,104),Haiti(6),Honduras(16,36),Jamaica(45,105,106),Mexico(1,6,31,33,37,45,79), Nicaragua(6,16,31),Saint-Kitts&Nevis(107),Saint-Lucia(108),Saint-Vincent&Grenadines(109), Trinidad&Tobago(20),USA(3,4,33,37,42,52,60,63,110)
Africa	43/54 countries (80%)	Algeria(111),Angola(2,112),Benin(113),Botswana(114),Burkina-Faso(6,113),Burundi(6,12), Cabo-Verde(1,2,6,115,116),Cameroon(6,36),Chad(12,36,45,106),D.R.Congo(6,113), Congo(6,113),Cote-d'Ivoire(3,6,45,63,106),Egypt(1,2,3,12,37,44,45,63,79),Eritrea(6), Ethiopia(6,12,45,117,118),Ghana(3,6,12,45),Guinea(6,113),Guinea-Bissau(1,112,113,115,116), Kenya(1,12,37,45,63,79),Libya(119,120), Madagascar(6),Malawi(2,121),Mali(2,6),Mauritania(6), Mauritius(122),Morocco(6,44,45,106),Mozambique(1,2,12,16,44,45,106,112,115,116,118), Namibia(123),Niger(6,113),Nigeria(12),Rwanda(118),Sao-Tome&Principe(112),Senegal(6), Sierra-Leone(2),Somalia(124,125),South-Africa(1,2,4,37),Sudan(126),Tanzania(6,12),Togo(6), Tunisia(6),Uganda(4,6,12,16,36,37,127),Zambia(2,12,37,45,63,79),Zimbabwe(7,37,45,106,113)
Asia	36/48 countries (75%)	Afghanistan(128),Bahrain(3,45,129),Bangladesh(1,3,4,7,16,44,45,60,63,79,130,131),Cambodia(2,42,60),China(1,2,4,6,7,37,42,43,45,60,63),Georgia(132),India(3,6,16,36,37,42,44,45,60,79), Indonesia(1,2,4,6,16,36,37,44,45,60,79),Iran(3,4,44),Iraq(4,132,133),Israel(33,100),Japan (33,45,60),Kazakhstan(134,135),Kyrgyzstan(3),Laos(6),Malaysia(60,136),Maldives(137), Mongolia(3),Myanmar(138),Nepal(1,3,60),Pakistan(139),Palestine(45),Phillippines(6), Qatar(78),Russia(2),Saudi-Arabia(45),Sri-Lanka(45,60,106),Syria(2),Tajikistan(3,140),Thailand (1,2,6,7,37,42,45,60,136),Timor-Leste(126),Turkey(45,141),United-Arab Emirates(142,143), Uzbekistan(144),Vietnam(2,3,6,45,60,63,145),Yemen(146)
Australia and Oceania	7/14 countries (50%)	Australia(1,44,45,57,60),Fiji(147,148),New-Zealand(3,33,44,45,57,60),Papua New-Guinea(2,16,36,60), Samoa(149,150),Solomon-Islands(151),Tonga(152)
TOTAL WORLD-WIDE	157/195 countries (81%)	

Abbreviation: PDP, physician dual practices

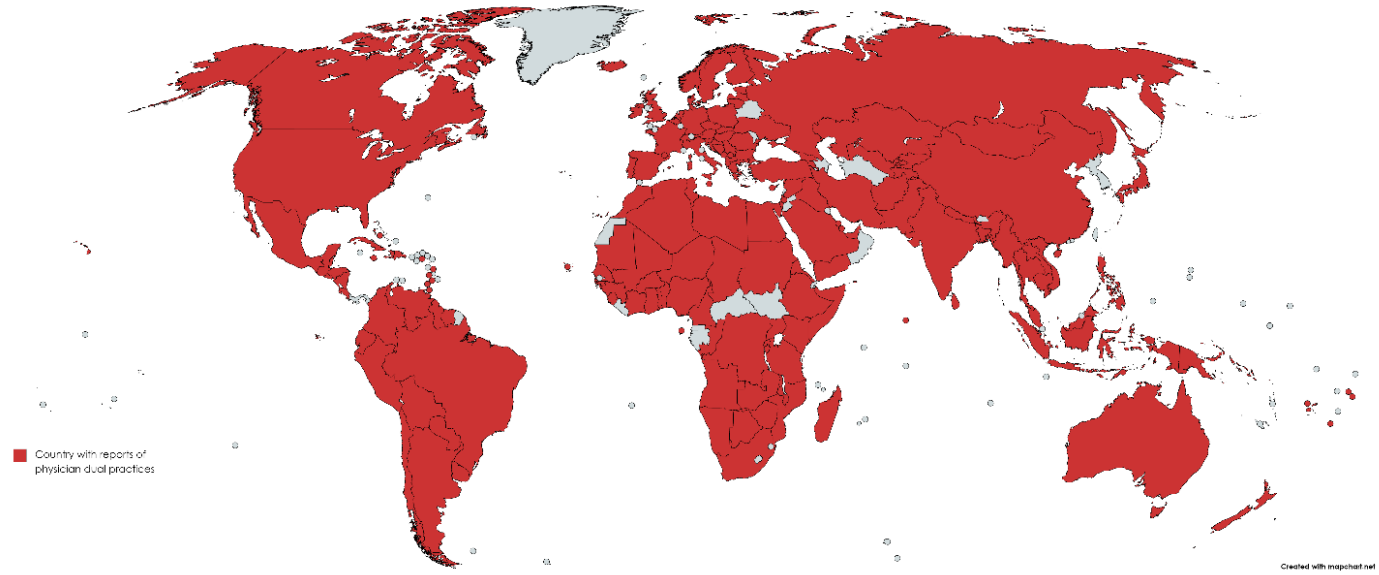

Fig. 1: Global map of reported physician dual practices

Comparison between countries with or without PDP-reports

Population size was larger in countries with PDP-reports (median: 11,067,777) than without (median: 2,071,666; *P*<0.001). All other country characteristics did not differ (*P*=Ns).

Characteristics of PDP-reports

Reports concerned: scientific journals (69%), global health reports (54%), newspaper articles (2%), government website (1%), hospital consultancy report (1%), legislation website (1%), expat website (1%), blog post (1%). Used electronic databases and search engines were: PubMed (69%), Google (57%).

Comparison of reasons for PDP between HIC versus LMIC

Most common reason for working in private sector was low government salaries in public hospitals (55%). This reason was more reported in LMIC (65%) than HIC (30%; *P*<0.001). Most common reason for working in public sector was patient recruitment for private practice (25%). This reason was more reported in HIC (45%) than LMIC (16%; *P*<0.001) (Table 2).

Comparison of consequences of PDP between HIC versus LMIC

Table 2 shows that the most common positive consequence of PDP was additional income for doctors (68%). PDP were described as detrimental to public health-sector in 58% of country-reports. Its most common adverse consequence was lower quality-of-care in public hospitals (27%).

Comparison between HIC versus LMIC

Table 3 compares characteristics between HIC versus LMIC with PDP-reports. PDP-scale was common in more LMIC (92%) than HIC (60%, *P*<0.001). Government policies (banning/some restrictions/no restrictions) to address PDP did not differ between HIC versus LMIC (P=Ns). "Some restrictions" were subdivided in: licensure regulations (n=39), financial regulations (n=21), promotion regulations (n=7).

Table 2: Comparison of reasons and consequences of physician dual practices between high- income versus low and middle-income countries

Physician dual practices:	*Countries with PDP-reports (n=157)*	*High-income coun-tries (n=47)*	*Low and middle-income countries (n=110)*	*P*
REASONS FOR WORKING IN PRIVATE SECTOR				
Low government salaries in public hospitals	86(55%)	14(30%)	72(65%)	<0.001*
Poor working conditions in public hospitals (inadequate facilities and shortages of drugs/equipment)	46(29%)	13(28%)	33(30%)	Ns*
High workload in public hospitals	34(22%)	6(13%)	28(25%)	Ns*
REASONS FOR WORKING IN PUBLIC SECTOR				
Recruitment of patients for private-practice	39(25%)	21(45%)	18(16%)	<0.001*
Status and prestige	28(18%)	6(13%)	22(20%)	Ns*
Access to information/schooling	25(16%)	6(13%)	19(17%)	Ns*
Social responsibility	23(15%)	7(15%)	16(15%)	Ns*
Access to public resources	19(12%)	12(26%)	7(6%)	<0.001*
Job security	11(7%)	3(6%)	8(7%)	Ns**
Professional team/network	10(6%)	2(4%)	8(7%)	Ns**
Complex patient cases	6(4%)	1(2%)	5(5%)	Ns**
POSITIVE CONSEQUENCES				
Additional income for doctors	106(68%)	33(70%)	73(66%)	Ns*
Higher professional satisfaction	24(15%)	7(15%)	17(15%)	Ns*
Reduction of financial burden on governments to retain high quality doctors in public hospitals	18(11%)	4(9%)	14(13%)	Ns**
ADVERSE CONSEQUENCES				
Lower quality-of-care in public hospitals	44(28%)	16(34%)	28(25%)	Ns*
Brain drain (to other countries/private sector/urban areas)	40(25%)	14(30%)	26(24%)	Ns*
Staff-shortages in public hospitals	34(22%)	6(13%)	28(25%)	Ns*
Outflow of resources and corruption (illegal use of public resources for private patients)	31(20%)	13(28%)	18(16%)	Ns*
Conflict of interests	30(19%)	16(34%)	14(13%)	0.002
Limited time/attention in public hospitals	28(18%)	7(15%)	21(19%)	Ns*
Waiting time/lists in public hospitals	25(16%)	12(26%)	13(12%)	0.031*
Self-gain of doctors	23(15%)	12(26%)	11(10%)	0.007*
Demoralized unmotivated staff in public hospitals	18(11%)	4(9%)	14(13%)	Ns**
Hinders Universal Health Coverage implementation	16(10%)	7(15%)	9(8%)	Ns*
Lack of continuity of care in public hospitals	14(9%)	2(4%)	12(11%)	Ns**
Limited access to care in public hospitals	11(7%)	3(6%)	8(7%)	Ns**
Privileged access of private patients to services in public hospitals	11(7%)	10(21%)	1(2%)	<0.001**
Inexperienced staff without supervision provides care in public hospitals	10(6%)	1(2%)	9(8%)	Ns**
OVERALL: Detrimental to public health-sector	91(58%)	31(66%)	60(55%)	Ns*

Abbreviation: PDP, physician dual practices
Statistical test:*Chi-square test;**Fisher-exact test

Table 3: Comparison of characteristics between high-income versus low and middle-income countries

Characteristics of countries with PDP-reports (n=157)	*High-income countries* (n=47)	*Low and middle-income countries* (n=110)	*P*
Continent:			
South-America (n=12)	2(17%)	10(83%)	<0.001
North-America (n=20)	6(30%)	14(70%)	*
Africa (n=43)	1(2%)	42(98%)	
Asia (n=36)	6(17%)	30(83%)	
Europe (n=39)	30(77%)	9(23%)	
Australia and Oceania (n=7)	2(29%)	5(71%)	
Population size#	8,675,475 (22,078,854: 3,640,843.5-23,384,676)	12,619,935.5 (31,226,516: 5,195,529-36,102,734.5)	0.017 ***
Corruption Perception Index (n=148):			
<50	6(14%)	94(90%)	<0.001*
≥50	38(86%)	10(10%)	*
Current health-expenditure (% of GDP)#	7.8 (4: 6.15-9.95)	6 (3.1: 4.25-7.25)	<0.001 ***
Out-of-pocket expenditure (% of current health-expenditure) (n=151):			
<15	14(30%)	14(13%)	<0.001
15-30	20(43%)	19(18%)	*
30-50	13(28%)	39(38%)	
50-60	0(0%)	17(16%)	
>60	0(0%)	15(14%)	
Universal Health Coverage Index (n=141):			
<80%	24(59%)	100(100%)	<0.001
≥80%	17(41%)	0(0%)	**
Press Freedom Index (n=148):			
Very bad	2(5%)	14(13%)	<0.001*
Bad	2(5%)	37(36%)	
Problematic	10(23%)	41(39%)	
Fairly good	18(41%)	10(10%)	
Good	12(27%)	2(2%)	
Physician Density (n=156):			
<1/1000 population	1(2%)	65(61%)	<0.001*
≥1/1000 population	46(98%)	41(39%)	
Scale of PDP (n=119):			
Common	18(60%)	82(92%)	<0.001*
Limited	12(40%)	7(8%)	*
Government policies (n=91):			
Banning	2(5%)	4(8%)	Ns*
Some restrictions	29(67%)	29(60%)	
No restrictions	12(28%)	15(31%)	

Abbreviation: PDP, physician dual practices; Ns, not significant Statistical test:*Fisher-exact test;**Chi-square test;***Mann-Whitney-U test # Median (interquartile range: lower bounds 25%-upper bounds 75%)

Discussion

This study provides a global résumé of PDP. Reports are found in 81% of all countries. The most common justification for PDP is low government salaries in public hospitals, especially in resource-limited countries. Its most prevalent negative effect is lower service standard in public hospitals. Scale of PDP is common in more LMIC than HIC. LMIC with PDP-reports have larger population, worse corruption, lower current health-expenditure, higher out-of-pocket expenses, lower UHC index, less press freedom, and lower physician density. Government policies to address PDP did not differ significantly between HIC versus LMIC.

Although previous literature does not provide a complete overview, it suggests that PDP are probably present in most countries worldwide (1-10,20). Our study indeed confirms this picture. PDP are reported in 77% of HIC and 82% of LMIC. However, this may still be an underrepresentation. Remarkably, the relative number of country-reports from Africa and Asia were fewer than from Europe and North America. This might partially be related to the fact that only English documents were included. In LMIC resources for investigative reports are scarce and press freedom to address government malfunctioning is limited (28,29).

Our study shows that low government salaries, poor working conditions, inadequate facilities, and drugs or equipment shortages in public hospitals are important reasons for working in private sector. These issues can be related to corruption (11,12). Corruption importantly affects health-care system structures at government, hospital, and health-care provider level. Health-care provision depends on effective transparent allotment of monetary resources, medical staff, and deliverables across nations. Corruption of health-policies begins with health-ministers and high-ranking civil-servants plundering public health-budgets or (inter)national funds for self-enrichment (11,12). Consequently, public hospitals receive too little budgets to hire sufficient staff and pay decent salaries. Our study affirms that this leads to staff-shortages, high workloads, and doctors supplementing low salaries by incorrectly referring patients to private practices (11,12,16).

Main positive consequence of PDP is additional income for doctors. Although PDP indeed give doctors opportunities to have suitable incomes, scientists emphasize that the adverse features outweigh the positive (2,20). They warn for predatory conduct, self-gain and conflicts of interests as doctors may provide undertreatment in public hospitals and overtreatment in private practices to enrich themselves (2,20). In 58% of country-reports, PDP are described as detrimental to public health-sector. Its main adverse consequence is lower quality-of-care in public hospitals. Most doctors dedicate most of their working time in private practice and are less available for their public employment (1-10,12,20).

Although PDP are present in almost all countries irrespective of their World Bank Country Classification (18), it is important to take differences between HIC versus LMIC into account. LMIC with PDP-reports are hindered by worse corruption. Poor leadership in these often densely populated nations evolves in bad government performance (11,12). LMIC have lower levels of UHC. Consecutive higher out-of-pocket health expenses especially impose financial difficulties for the less affluent. Health inequity remains when poor populations have limited access to good medical care as the already small number of experienced doctors are absent (1,2,12,20,24). WHO mentions that people-cantered motivated health-workforces are required to implement UHC, yet PDP lead to demoralized unmotivated staff(1-10,12), undermining this Sustainable Development Goal (1,24). It is important to consider these country aspects when weighing regulatory strategies to address PDP.

Government policies (banning/some restrictions/no restrictions) to address PDP do not differ significantly between HIC versus LMIC. Although PDP are present regardless of national income level or extent of regulatory restrictions, it is important that government policies take certain

country features into account to better fit local settings (2,20). For instance, health-systems in HIC are often more sophisticated, have better-established private health-sectors, independent monitoring bodies and strong advocacy groups run by patients (1). In such settings working across sectors can ameliorate professional experience and satisfaction (4,20). Optimum policies to address PDP depend on available health-care system structures in countries (1,12). If key-elements (monitoring systems for health-budgets, personnel, and supplies; severe punishments of misconduct; rewards for good performance; decent government salaries) are available, then activities in public and private sector can sufficiently be monitored and regulated to allow PDP(11,12). However, if these key-elements are lacking, then PDP lead to absenteeism and medical neglect of patients in public hospitals and should not be allowed. In the latter scenario, governments must first improve structures in which their health-care systems function to ensure equal access to adequate medical-care (11,12).

Our study had few limitations. Solely English PDP-accounts were enrolled, which means that the 157 country-reports are probably an underrepresentation of the extent of the problem. PDP may be present in more nations, but are either only documented in other languages or not documented at all. No country-report therefore does not imply absence of PDP. In addition, in the current literature insight into the scale of PDP per country is missing. All reports lacked clear scale definitions (1-4,6-8,10,16,21). This hinders comparison of the magnitude of the problem across countries. More investigations into PDP prevalence and scale across countries are required.

Conclusion

PDP-accounts are found in 81% of nations worldwide. Low government salaries in public health-sector mainly cause PDP. PDP reduce the quality of public health-care delivery. The optimum policy to modulate PDP depends on governments' capacity to enforce restrictions and monitor both public and private health-sector activity. We recommend that if key-elements of health-care systems (monitoring systems, punishment for corruptors, rewards for good performance, and proper salaries) are available, then activities in public and private sector can sufficiently be monitored and regulated to allow PDP. However, if these key-elements are absent, then PDP cause absenteeism and medical neglect of patients in public hospitals and should be prohibited.

Journalism Ethics considerations

Ethical issues (including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy) have been completely observed by authors.

Conflict of interest

The authors declare that there is no conflict of interest.

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