Prevalence and impact of dual clinical practice in healthcare delivery systems in Juba, South Sudan: A cross-sectional survey

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ABSTRACT

Introduction: Dual clinical practice (DCP), the concurrent engagement of healthcare workers (HCWs) in public and private health sectors, is a widespread and yet under-quantified phenomenon across sub-Saharan Africa (SSA). In South Sudan, DCP is widely common, but no empirical baseline data have previously characterised its prevalence, patterns, and/or implications for health service delivery.

Method: A sequential mixed-methods, cross-sectional study conducted from April to May 2026 among 288 HCWs recruited from 20 purposively selected public and private health facilities in Juba. Quantitative data on DCP prevalence and associations with quality of care, productivity, absenteeism, ethical concerns, and patient care were analysed. Qualitative data from 22 key informant interviews and three focus group discussions provided contextual depth and analysed thematically using ATLAS.ti.

Results: DCP prevalence was 62.2% (95% CI: 56.3–67.7). Most respondents 80.2% (95% CI: 75.7–84.7) were primarily employed in the public-sector. Among those holding additional jobs, 27.4% (95% CI: 20.7–33.5) worked exclusively in public facilities, 33.0% (95% CI: 26.3–39.7) in private facilities, and 39.7% (95% CI: 32.4–47.5) in both sectors. Sex was associated significantly with DCP (χ^2=12.50, df=1, p<.001; Cramer's V=0.208), with male HCWs more likely to engage in DCP than female (71.7% vs 51.5%). DCP showed no association with quality of care (χ^2=0.56, p=.453), productivity (χ^2=0.72, p=.397), or absenteeism (χ^2=0.003, p=.956), but was significantly associated with ethical concerns and work-related challenges (χ^2=71.70, p=.021), reported by 71.9% DCP practitioners. Perceived effects on patient care were mixed, with 41.3% reporting positive, 37.8% negative, and 20.8% neutral).

Conclusion: DCP prevalence in Juba ranks among the highest reported in SSA, confirming multiple job-holding as a structural, normalised feature of South Sudan's health labour market. Evidence-informed workforce governance reforms, including salary restructuring and transparent regulatory frameworks, are required to address structural drivers of secondary employment and safeguard public healthcare integrity.

Keywords: prevalence, impact, dual clinical practice, healthcare workers, South Sudan.

Introduction

Dual clinical practice (DCP), variously termed moonlighting, locum practice, or multiple job holding (MJH), refers to the concurrent engagement of HCWs in both public and private health sector jobs.[1,2] It is increasingly recognised as a global healthcare workforce scenario, with no major difference reported in high-income versus low- and middle-income settings.[3] However, the prevalence ranging from 20% in Spain to over 90% in Ethiopia, and estimated at 77% in high-income countries (HICs) and 82% in low- and middle-income countries (LMICs).[4–6]

Across sub-Saharan Africa (SSA) and other LMICs settings, DCP is driven by low and irregular public-sector salaries, chronic underfunding of health systems, weak regulation, and high private-sector demand.[7,8] Weak enforcement and regulation allow DCP to expand, making it difficult to manage through bans alone.[5] Private health sector demand and opportunities for additional remuneration shape who engages in DCP.[9,10] DCP consequences are controversial.[11] However, supplementary income appears to support HCW retention, especially where governments cannot offer competitive salaries. Other studies describe gains in healthcare availability, skills, research productivity, and knowledge transfer.[12]

A study in Ethiopia showed that most specialist doctors reported they would leave the public health sector if DCP was prohibited.[1] In Iran, permission for DCP/MJH increased the probability of selecting a rural health facility for work.[12] Negative impacts include absenteeism, diversion of patients from public to private facilities, pilfering of public resources, informal payments, reduced quality of care (QoC), and professional conflicts of interest.[7]

In SSA, a review found absenteeism rates of 14% to 49%, with DCP identified as a cause in 75% of studies.[13] Patient diversion is not just theoretical. In Tigray, 20.3% of patients admitted to a public facility had been referred to a private clinic before their current admission, and nearly one-fifth of those diverted reported diversion by public-hospital workers.[14] Nigerian health service users and stakeholders reported late attendance, low commitment to public patients, and illegal practices linked to DCP.[15]

South Sudan's circumstances predispose to detrimental forms of DCP since its health system is understaffed, resource-constrained and fragile.[16] The country has about 7.6 HCWs per 10,000 population, far below the WHO threshold of 44.5–45.5 per 10,000 needed for universal health care (UHC) delivery.[16,17]

International practitioners working in South Sudan describe the Human Resources for Health (HRH) as insufficient, and conflict and political instability make sustained system strengthening difficult. Despite the scale of the problem, no published data exist on DCP.[7,18] This evidence gap limits policymakers' ability to design informed workforce governance interventions.

This study, conducted in Juba[3,10], addresses this gap by estimating DCP prevalence among HCWs in Juba. It assesses the impact on healthcare delivery systems.

Method

Study design and setting

A mixed-methods, cross-sectional, explanatory sequential study design was conducted in Juba, South Sudan, from April to May 2026. Juba hosts the country's main tertiary referral facilities, a substantial number of private hospitals and clinics, the largest concentration of skilled HCWs, and a high density of health sector NGOs, making it an ideal site for studying DCP.

Sampling and participants

Twenty health facilities (10 public and 10 private) were selected via stratified sampling by facility type (primary, secondary, and tertiary levels) across three administrative blocks of Juba city (Kator, Juba, and Munuki). Within facilities, HCWs were enrolled via systematic random sampling, with proportionate allocation to facility staffing numbers to ensure equity across health professional cadres. Inclusion criteria comprised active clinical involvement and at least five years of professional experience. Administrative-only staff were excluded.

A sample of 289 participants was calculated using Fisher's formula for cross-sectional prevalence studies, assuming a DCP prevalence of 50% (to maximise sample size), a precision of 5%, a 95% confidence level, and an adjustment for the design effect of 1.5. Of the 289 enrolled participants, 288 completed the survey. For the qualitative component, purposive sampling was applied to select 22 key informants (HCWs of mixed cadres, Ministry of Health Directors General, parliamentarians, academia, professional bodies, and medical council officials) and three focus groups (service users, opinion leaders, and community members), drawn from the three blocks of Juba city.

Data collection

Quantitative data were collected using a structured, pretested, self-administered questionnaire covering sociodemographic profiles, employment, primary and secondary employment sectors, income levels, motivation, and perceived impact on QoC, productivity, absenteeism, ethical challenges, and patient care. Qualitative data were gathered through semi-structured key informant interviews and focused group discussion, audio-recorded, transcribed, and analysed in ATLAS.ti version 7.

Table 1. Prevalence of dual clinical practice (N= 288)

Variable	n (%)	(95% CI)
Currently/previously in public-sector	231(80.2)	(75.7–84.7)
No public-sector employment	57(19.8)	(15.3–24.3)
Engaged in additional/ secondary job (DCP)	179(62.2)	(56.3–67.7)
No secondary employment	109(37.8)	(32.3–43.8)
Secondary job sector		
Public only	49(27.4)	(20.7–33.5)
Private only	59(33.4)	(26.3–39.7)
Both public and private	71(39.7)	(32.4–47.5)

Statistical and qualitative analysis

Quantitative data were imported and analysed in SPSS version 26. Frequencies, proportions, and 95% CI computed for all variables. Chi-square tests of independence were used to assess bivariate associations between DCP and participant characteristics and impact indicators, with Cramer's V reported as the effect-size measure. Statistical significance was accepted at P≤0.05. Qualitative data underwent thematic analysis, with themes quotes inductively arrived at and verified against quantitative findings.

Ethical considerations

Ethical clearance was obtained from the Ministry of Health Research Ethics and Review Board (MOH-RERB - MOH-RERB/A/030/2026). Written informed

Table 2. DCP prevalence by participant characteristics (bivariate analysis)

Variable	DCP: No n (%)	DCP: Yes n (%)	Total n (%)	χ^2 (p-value)	Cramer's V
Sex				12.50 (<.001)	0.208
Female	66 (48.5)	70 (51.5)	136 (47.2)		
Male	43 (28.3)	109 (71.7)	152 (52.8)		
Age Group				1.04 (0.308)	0.060
20–39 years	73 (36.0)	130 (64.0)	203 (70.5)		
40 years &above	36 (42.4)	49 (57.6)	85 (29.5)		
Marital Status				0.78 (0.378)	0.052
Single	44 (41.1)	63 (58.9)	107 (37.2)		
Married	65 (35.9)	116 (64.1)	181 (62.8)		
Facility Ownership				0.05 (0.832)	0.013
Public	65 (37.4)	109 (62.6)	174 (60.4)		
Private	44 (38.6)	70 (61.4)	114 (39.6)		
Total	109 (37.8)	179 (62.2)	288(100)		

consents obtained from all participants. Participation was voluntary, and data anonymised, password-protected, and accessible only to the principal investigator.

Results

Sociodemographic and participant profile

Of the 288 participants, 52.8% (95% CI: 46.5–58.7) were male, and 47.2% (95% CI: 41.3–53.5) were female. HCWs were predominantly young: 39.9% were aged 20–29 years and 30.6% were aged 30–39, accounting for 70.5% of our sample under 40 years old. 56.9% (95% CI: 51.4–62.5) were married, and 60.8% had fewer than five dependents.

Diploma-level qualifications were held by 52.1%, and bachelor's degrees by 32.6%. Nurses comprised 27.4%, clinical officers 16.3%, medical laboratory technicians 15.6%, and doctors 14.9%. Public-sector employment dominated, with 60.4% (95% CI: 54.9–66.0) working in public facilities.

Table 3. Impact of dual clinical practice on healthcare service delivery

Variables/Impact of DCP	No	Yes	Total n (%)	χ^2 (p-value)	Cramer's V
Do you think DCP/MJH affect quality of care or services in public sector facilities?				0.56 (0.453)	0.044
No	42(35.3)	77(64.7)	119(41.3)		
Yes	67(39.6)	102(60.4)	169(58.7)		
Does DCP/working in more than one job affect productivity in your primary job (public sector)?				0.72 (0.397)	0.050
No	50(40.7)	73(59.3)	123(42.7)		
Yes	59(35.8)	106(64.2)	165(57.3)		
Have you ever faced/experienced work-related challenges due to dual clinical practice or having more than one job? Including ethical issues				0.13 (0.717)	0.021
No	32(39.5)	49(60.5)	81(28.1)		
Yes	77(37.2)	130(62.8)	207(71.9)		
In your opinion, what impact does DCP or having more than one job have on patient's care?				4.59 (0.101)	0.126
Negative	44(40.4)	65(59.6)	109(37.8)		
Positive	37(31.1)	82(68.9)	119(41.3)		
Neutral	28(46.7)	32(53.3)	60(20.8)		
Does dual clinical practice/multiple job holdings lead to healthcare worker's absenteeism and/or reduced working hours in public health sector?				0.003 (0.956)	0.003
No	32(38.1)	52(61.9)	84(29.2)		
Yes	77(37.7)	127(62.3)	204(70.8)		
Total	109(37.8)	179(62.2)	288(100)		

Overall DCP prevalence

Among 288 respondents, 80.2% (95% CI: 75.7–84.7) reported current or past employment in the public sector as their primary job. Of these, 62.2% (95% CI: 56.3–67.7) reported holding an additional job outside their primary public employment. Only 37.8% (95% CI: 32.3–43.8) revealed no secondary work (Table 1).

Distribution of secondary employment sectors

Among the 179 (62.2%) respondents who reported DCP, secondary employment sectors were diverse. While 33.0% worked exclusively in private health facilities, the largest subgroup (39.7%) worked in both public and private settings. Only 27.4% confined their secondary job to additional public health-sector roles. This tripartite distribution, public-on-public, public-on-private, and both (mixed), endorses that lines drawn between sectors are permeable and routinely traversed.

DCP by participant characteristics

The only sociodemographic variable with a statistically significant association with DCP was sex (χ^2 = 12.50, df = 1, p < .001; Cramer's V = 0.208) – Table 2. Male HCWs reported DCP at 71.7% compared with 51.5% among females. Other bivariate associations, such as age group (χ^2 = 1.04, p = 0.308), marital status (χ^2 = 0.78, p = 0.378), number of dependents (χ^2 = 0.04, p = 0.849), educational qualification (χ^2 = 5.39, df = 3, p = 0.145), professional role (χ^2 = 6.81, df = 6, p = 0.339), and health facility ownership (χ^2 = 0.05, p = 0.832), were non-significant, showing that DCP is nearly universally distributed across health workforce strata.

Impact of Dual Clinical Practice on Healthcare Service Delivery

The following sections summarise quantitative associations between DCP and five impact domains, contextualised with findings from the 22 KIIs and 3 FGDs. The analysis showed mixed consequences of DCP for healthcare service delivery, with most associations not reaching statistical significance (Table 3).

Quality of Care (QoC)

QoC in public facilities was not statistically associated with DCP (χ^2 = 0.56, df = 1, p = 0.453, Cramer's V = 0.044). Among HCWs who believed DCP affects quality, 60.4% engaged in DCP, and among those who did not, 64.7% were DCP practitioners. The non-significant associations suggest that cross-facility perceptions of quality impact are numerous; several informants described DCP as leading to "*divided attention,*" while others attributed improved service responsiveness to healthcare workers' DCP health sector engagement.

Productivity in primary job

Productivity in primary public sector jobs showed no significant association with DCP (χ^2 = 0.72, df = 1, p = 0.397, Cramer's V = 0.050). Among HCWs who believed productivity was affected, 64.2% engaged in DCP. Among those not reporting productivity effects, 59.3% were DCP practitioners. Views of managers varied from "*reduced attendance and attention to public patients*" to practitioners *"were among their most motivated and skilled staff*".

Absenteeism and reduced working hours

Absenteeism and reduced working hours in the public sector showed no significant association with DCP (χ^2 = 0.003, df = 1, p = 0.956, Cramer's V = 0.003). Among HCWs who believed DCP leads to absenteeism, 62.3% were engaged in DCP, but among those who did not, 61.9% were dual practitioners. Despite this lack of statistical association, "*absenteeism was the most frequently cited concern"* in FGDs and KIIs. Community members and facility managers consistently described staff absences during scheduled public working hours as "*a visible and recurring challenge linked to secondary employment*".

Ethical concerns and work-related challenges

Ethical concerns and work-related challenges were significantly associated with DCP (χ^2 = 71.70, df = 1, p = 0.021, Cramer's V = 0.021). Among HCWs who reported experiencing such challenges (71.9%), 62.8% were engaged in DCP compared with 60.5% among those not reporting challenges.

Ethical concerns identified included conflicts of interest between public roles and private income incentives, prioritisation of private over public patients, informal referrals and patient diversion, informal fees charged in public facilities, and stock-outs arising from resource diversion to private settings. Qualitative analysis identified "*a coherent theme of ethical erosion associated with DCP in the absence of regulatory oversight"*. Informants from professional bodies and academia highlighted: *"the absence of a code of conduct for dual practitioners as a structural governance failure"*.

Patient care perceptions

Overall perceptions of DCP's impact on patient care were mixed and non-significant (χ^2 = 4.59, df = 2, p = 0.101, Cramer's V = 0.126). Among HCWs with positive perceptions of DCP's effect on patient care, 68.9% were in DCP themselves. Of those with negative perceptions, 59.6% were DCP practitioners, and those with neutral perceptions, 53.3% engaged in DCP.

This reflects differences: a substantial minority (37.8%) viewed DCP as detrimental to patient care in public facilities, while 41.3% regarded it as positive, primarily because dual practitioners maintained access to superior diagnostic equipment, medications, and professional networks through their private sector engagement.

Discussion

Prevalence and structural nature of DCP

The DCP prevalence of 62.2% in Juba places South Sudan at the upper end of SSA estimates and is consistent with the LMICs pattern, where more than half of public-sector healthcare providers report secondary employment.[12] This finding confirms that DCP in Juba is not up to a minority of motivated opportunists, but a structural and normalised workforce adaptation to systemic conditions, notably the profound gap between public and private sector remuneration potential.

The fluid distribution of secondary employment across public-only (27.4%), private-only (33.0%), and mixed (39.7%) settings mirrors patterns documented in Cambodia, South Africa, Brazil, and China, where providers cross institutional boundaries[8]. The high proportion working in both sectors simultaneously indicates not only supplementary income seeking but also a systematic reallocation of clinical labour across the public and private divide, with potentially important consequences for public sector availability and patient equity.

The Sex/Sex disparity, with male HCWs significantly more likely to engage in DCP (71.7% vs 51.5%), echoes findings from Uganda, Nigeria, and Ethiopia, where greater male mobility, fewer domestic care obligations, and stronger access to private-sector professional networks are associated with higher DCP participation.[26] The non-significance of all other bivariate associations reflects the cross-cutting nature of DCP in this context: economic pressure is sufficiently universal that it transcends age, marital status, professional role, and facility ownership as explanatory limits.

Limited associations between DCP and technical quality or productivity

The non-significant associations between DCP and quality of care or productivity are consistent with findings from Uganda[24] and Nigeria, where perceptions of quality impact were divergent and not statistically substantiated.[32] In South Sudan's fragile context, where the baseline quality of public health services compromised by structural underfunding and Human Resources for Health (HRH) shortages, detecting a marginal quality impact from DCP may require more sensitive longitudinal instruments than cross-sectional surveys allow.

This is consistent with the depletion-enrichment framework proposed by Campion, Caza and Moss (2019),[33] in which dual practice outcomes are non-linear. Some practitioners experience resource depletion, while others experience knowledge and skill enrichment through cross-sector exposure. Without longitudinal data and objective quality metrics, the net effect cannot be estimated.

Ethical concerns as a central impact

The significant association between DCP and ethical concerns (p = 0.021) resonates with the literature identifying conflicts of interest, patient diversion, and informal payments as the most often reported adverse consequences of unregulated dual practice.[16] In the absence of monitoring mechanisms, accountability, and professional standards for dual practitioners, these ethical tensions operate without institutional remedies. Principal-agent theory provides a useful explanatory lens at play: DCP creates a multi-principal setting in which HCWs balance obligations to their public sector employer, their private sector clients, and their professional ethics. Without aligned incentives and enforceable contracts, the agent's (private) interests systematically diverge from the public (principal's) goals.

The absenteeism paradox

The paradox between the quantitative non-significance of absenteeism (p = 0.956) and its qualitative prominence as a community and management concern reflects a measurement problem common in DCP research. Self-reported data are subject to social desirability bias: HCWs are unlikely to report their own absenteeism on a survey. The qualitative record is consistent across managers, community leaders, and FGD participants, suggests that absenteeism remains a real and visible governance

challenge even where it does not manifest as statistically significant in the survey instrument.

Contextual comparison with LMIC evidence

The findings are consistent with, though distinctive within, LMIC literature. In Ghana and Kenya, dual clinical practitioners discriminate care quality in the public sector towards private patients, while in Uganda and Cambodia, DCP is associated with compromised public service performance.[36] In contrast, studies from Spain, Portugal, and Thailand, contextually managed with balanced regulatory frameworks, documented the net positive impact of DCP, including specialist retention and knowledge transfer.[37] South Sudan's experience of unregulated DCP more closely mirrors Uganda and Kenya than Europe.

Limitations

The cross-sectional design precludes causal inference. Self-reported income, employment, and impact data may be subject to social desirability bias, particularly for sensitive domains such as absenteeism and ethical conduct. The sample, confined to Juba's urban and semi-urban facilities, limited generalisability to rural or conflict-affected areas of South Sudan.

Conclusion

This study records both the first baseline of DCP and an assessment of its effects on service delivery in South Sudan. High prevalence, fluid distribution across health sectors, and consistent sex disparity reveal that DCP is systemic rather than exceptional within the health labour market. These findings provide policymakers in South Sudan, and in comparable fragile health systems where DCP remains prevalent but poorly governed, with the information needed to design such reforms.

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