Gender- and cadre-specific distributional inequality of the Tanzanian health workforce

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Background
While unavailability of health personnel in sufficient numbers, inadequate skills and geographical imbalance have been visibly documented as critical challenges the Tanzanian health sector faces, paucity lingers about gender- and cadre-specific distribution and what this implies to the country's health sector. This study attempts to describe the distribution of the country's health workforce primarily by gender and cadre but also taking a note of other demographic characteristics.

Methods
We analyzed cross-sectional data collated by the Health Systems Strengthening for Equity (HSSE) project of the Ifakara Health Institute in 2008 through a self-administered questionnaire. This resulted from a random selection of 88 health facilities in 8 regions of Tanzania that yielded 815 health workers who perform at least one EmOC signal function interviewed. Analysis was conducted using STATA (version 10) statistical software (StataCorp, Texas, USA). In addition to the proportions of individuals in various categories of the socio-demographic variables, we also presented male-to-female ratio. Pearson Chi square and student's t-tests for categorical and continuous variables respectively were used to test for associations at 5% significance level.

Results
A total of 815 (75% women and 25% men) health workers responded to the questionnaire. Mean age was 39.7 years (SD = 9) ranging from 15 to 63. Majority of certificate (89%) and diploma (64%) holders were women but they were the minority (36%) among holders of advanced diploma and higher professional qualifications. The proportion of women among Medical Attendants, Nurses, Midwives, Clinical Officers and Doctors was 86%, 86%, 91% 28% and 21% respectively. Male-to-female ratios calculated were consistent with the aforementioned proportions (Table 1).

Conclusion
Distribution of the Tanzania's health workforce is dramatically gender-skewed, reflecting gender inequality in career choices. Women are concentrated in the lower-status health cadres but poorly represented in the highly trained ones. Nursing and midwifery cadres are large and female-dominant, whereas clinical officers, assistant medical doctors, medical doctors and higher cadres are fewer in absolute numbers and male-dominant. Since female-dominant cadres have more people, majority of which are less educated, furthering their education and improving career advancement opportunities with a special attention to women is worthwhile.

Table 1. Distribution of the Tanzanian health workforce by background characteristics, 2008 (n = 815)

| Characteristic | Gender | | Total | Male to female ratio | P-Value* |
| | Male | Female | | | |
	n (%)	n (%)	n (%)		
Professional backround					
MCHA/MA	24 (11.9%)	150 (24.4%)	174 (21.4%)	0.16	
Nurse	31 (15.4%)	188 (30.6%)	219 (26.9%)	0.16	
Midwife	22 (11.0%)	235 (38.3%)	257 (31.5%)	0.09	<0.001
CO	65 (32.3%)	25 (4.1%)	90 (11.0%)	2.60	
Doctor (AMO, MD +)	59 (29.4%)	16 (2.6%)	75 (9.2%)	3.69	
Total	**201 (100%)**	**614 (100%)**	**815 (100%)**	**0.33**	
Age group (years)					
15-24	4 (2.1%)	14 (2.4%)	18 (2.3%)	0.29	
25-34	36 (19.1%)	215 (37.1%)	251 (32.6%)	0.17	
35-44	72 (38.1%)	184 (31.7%)	256 (33.3%)	0.39	<0.001
45-54	58 (30.7%)	127 (21.9%)	185 (24.1%)	0.46	
55-64	19 (10.1%)	40 (6.9%)	59 (7.7%)	0.48	
Total	**189 (100%)**	**580 (100%)**	**769 (100%)**	**0.33**	
Mean	42.2	38.9	39.7	1.08	
SD	9.3	9.4	9.5	0.99	
Region					
Dodoma	28 (13.9%)	85 (13.8%)	113 (13.9%)	0.33	
Iringa	21 (10.5%)	95 (15.5%)	116 (14.2%)	0.22	
Mbeya	29 (14.4%)	102 (16.6%)	131 (16.1%)	0.28	
Mtwara	16 (8.0%)	23 (3.8%)	39 (4.8%)	0.70	
Mwanza	24 (11.9%)	85 (13.8%)	109 (13.4%)	0.28	0.002
Pwani	30 (14.9%)	71 (11.6%)	101 (12.4%)	0.42	
Tabora	37 (18.4%)	65 (10.6%)	102 (12.5%)	0.57	
Tanga	16 (8.0%)	88 (14.3%)	104 (12.8%)	0.18	
Total	**201 (100%)**	**614 (100%)**	**815 (100%)**	**0.33**	
Highest level of education completed					
Certificate	52 (26.8%)	403 (68.0%)	455 (57.8%)	0.13	
Diploma	80 (41.2%)	139 (23.4%)	219 (27.8%)	0.58	
≥ Advanced diploma	58 (29.9%)	32 (5.4%)	90 (11.4%)	1.81	<0.001
Others	4 (2.1%)	19 (3.2%)	23 (2.9%)	0.21	
Total	**194 (100%)**	**593 (100%)**	**787 (100%)**	**0.33**	
Leaving level for basic education					
Primary	36 (18.1%)	167 (27.5%)	203 (25.2%)	0.22	
Ordinary secondary	129 (64.8%)	403 (66.3%)	532 (65.9%)	0.32	
Advanced secondary	29 (14.6%)	18 (3.0%)	47 (5.8%)	1.61	<0.001
Others	5 (2.5%)	20 (3.3%)	25 (3.1%)	0.25	
Total	**199 (100%)**	**608 (100%)**	**807 (100%)**	**0.33**	

MCHA = Maternal and Child Health Aider, MA = Medical Attendant, CO = Clinical Officer, AMO = Assistant Medical Officer. *Based on Pearson Chi-Square test.