HIV and TB Stigma Affecting Individuals with Pulmonary TB in East Africa

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BACKGROUND

- HIV and TB stigma may undermine TB care engagement and outcomes. Data are needed to characterize HIV and TB stigma faced by people with TB.
- We investigated HIV and TB stigma and associated factors among people with pulmonary TB in East Africa.

METHODS

- The TB Sentinel Research Network of IeDEA is a global prospective cohort of people aged ≥15 with pulmonary TB, with and without HIV.
- At study sites in Eldoret, Kenya, and Mbarara, Uganda, adapted van Rie HIV and TB stigma questionnaires were used to investigate 1) felt/experienced HIV stigma, 2) perceived community HIV stigma, and 3) TB stigma.
- We assessed standardized stigma scores for associations with select factors using Wilcoxon rank-sum test and multivariable regression analysis.

RESULTS

- Data analyzed from 219 people with TB, including 70 (32%) people living with HIV (PLHIV) (**Table 1**)
- Felt HIV stigma (among PLHIV only) was greater than perceived HIV stigma and TB stigma (**Table 2**)
- Questions with means above 2 (neutral) on TB stigma scale:
  - *"I keep a distance from others to avoid spreading TB germs."*
  - *"I am afraid to tell those outside my family that I have TB."*
  - *"I choose carefully who I tell about having TB."*
- By Wilcoxon rank-sum tests:
  - Perceived community HIV stigma did not differ by HIV status (**Figure 1**)
  - TB stigma was higher for PLHIV compared to those who were HIV-negative (**Figure 2**)
- In multivariate analyses (**Table 3**):
  - Felt HIV stigma (for PLHIV) was associated with younger age and lack of fever
  - Perceived HIV stigma was associated with younger age, no education, and post-secondary education
  - TB stigma was associated with food insecurity. Univariate associations with HIV status, female sex, and separated state were not statistically significant in multivariate analysis.

HIV stigma is substantial among people with TB in East Africa, particularly youth. TB stigma is associated with food insecurity.

Table 1. Sociodemographic and clinical characteristics

	All n=219 (%)	PLHIV n=70 (%)	HIV-negative n=149 (%)
Age, mean years (s.d.)	35.5 (12.7)	41.3 (11.0)	32.8 (12.6)
Sex			
Male	145 (66)	35 (50)	110 (74)
Female	74 (34)	35 (50)	39 (26)
Study site			
Eldoret, Kenya	141 (64)	33 (47)	108 (72)
Mbarara, Uganda	78 (36)	37 (53)	41 (28)
ART status (for PLHIV)			
On ART at TB diagnosis	--	40 (57)	--
Not on ART at TB diagnosis	--	10 (14)	--
Unknown	--	20 (29)	--
Previous TB disease			
Yes	48 (22)	24 (34)	24 (16)
No	170 (78)	45 (65)	125 (84)
Unknown	1 (0.5)	1 (1)	
Outcome of previous TB	n=48	n=24	n=24
Successful treatment	39 (81)	20 (83)	19 (79)
Poor outcome	9 (19)	4 (17)	5 (21)
Known contact with TB			
Yes	45 (21)	10 (14)	35 (23)
No	174 (79)	60 (86)	114 (77)
Type of contact with TB	n=45	n=10	n=35
Household	27 (60)	7 (70)	20 (57)
Non-household	17 (38)	3 (30)	14 (40)
Unknown	1 (2)		1 (3)
Baseline TB symptoms			
Fever	173 (79)	56 (81)	117 (78)
Cough	207 (95)	65 (94)	142 (95)
Hemoptysis	60 (29)	15 (23)	45 (32)
Weight loss	189 (87)	60 (87)	129 (87)
Baseline BMI, mean (s.d.)	19.1 (3.9)	20.1 (5.3)	18.6 (3.0)
Place of residence			
Urban	107 (49)	36 (51)	71 (48)
Rural	112 (51)	34 (49)	78 (52)
Education level			
None	9 (4)	7 (10)	2 (1)
Primary	73 (33)	28 (40)	45 (30)
Secondary	91 (42)	25 (36)	66 (44)
Post-secondary	46 (21)	10 (14)	36 (24)
Marital status			
Single	90 (41)	14 (20)	76 (51)
Married	77 (35)	24 (34)	53 (36)
Widowed	10 (5)	7 (10)	3 (2)
Divorced	6 (3)	2 (3)	4 (3)
Separated	36 (16)	23 (33)	13 (9)
Food insecurity score, median (IQR)	5 (0-9)	6 (0-11)	4 (0-9)

Table 2. Median standardized scores in each stigma domain.

	All (N=218)	PLHIV (n=70)	HIV neg (n=148)	p-value
Felt HIV stigma	--	3.00	--	--
Perceived HIV stigma	1.95	1.95	1.99	.84
TB stigma	1.70	1.83	1.65	.05

Figure 1. Perceived community HIV stigma by HIV status.

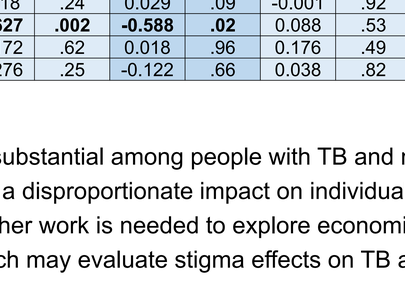


Figure 2. TB stigma by HIV status.

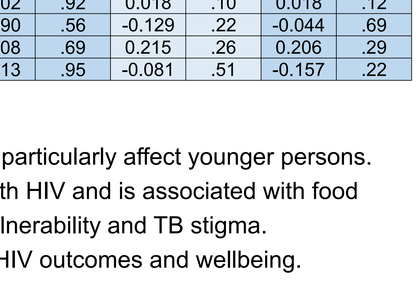


Table 3. Univariate and multivariate regression analyses for each stigma domain.

Parameter	Felt HIV stigma, for PLHIV				Perceived HIV stigma				TB stigma			
	Uni. est.	p-value	Multi. est.	p-value	Uni. est.	p-value	Multi. est.	p-value	Uni. est.	p-value	Multi. est.	p-value
Age	**-0.018**	**.01**	**-0.019**	**.05**	**-0.015**	**<.001**	**-0.017**	**.003**	0.0003	.93	-0.005	.25
Female sex	0.257	.11	0.086	.68	0.077	.51	-0.139	.31	**0.209**	**.02**	0.077	.43
Marital status												
Divorced	-0.500	.32	0.136	.81	**-0.677**	**.05**	-0.417	.25	-0.438	.08	-0.506	.06
Separated	0.089	.69	-0.080	.76	-0.013	.94	0.197	.31	**0.421**	**<.001**	0.227	.10
Widowed	-0.050	.87	-0.299	.40	-0.287	.29	-0.020	.95	0.255	.20	-0.018	.94
Married	-0.300	.18	-0.312	.23	-0.223	.08	0.031	.83	0.045	0.63	0.026	.80
Single	--	--	--	--	--	--	--	--	--	--		
Urban residence	-0.123	.44	-0.208	.21	0.176	.11	0.111	.31	0.065	.44	-0.003	.97
Education level												
None	0.392	.17	0.211	.51	0.506	.07	**0.692**	**.03**	0.264	.22	-0.050	.82
Primary education	0.081	.66	0.184	.38	-0.156	.21	-0.101	.46	-0.029	.77	-0.117	.22
Secondary	--	--	--	--	--	--	--	--	--	--	--	--
Post-secondary	-0.158	.53	0.104	.68	**0.314**	**.03**	**0.312**	**.04**	-0.201	.07	-0.094	.38
HIV-positive	--	--	--	--	0.028	.81	0.117	.39	**0.176**	**.05**	0.046	.63
Food insecurity score	0.018	.16	0.016	.27	-0.002	.87	0.006	.57	**0.038**	**<.0001**	**0.038**	**<.0001**
Previous TB disease	0.061	.72	-0.201	.28	-0.003	.98	-0.089	.52	-0.124	.22	-0.089	.38
Known contact with TB	0.003	.44	0.002	.53	0.001	.65	0.003	.22	0.001	.55	0.001	.50
BMI	0.018	.24	0.029	.09	-0.001	.92	0.002	.92	0.018	.10	0.018	.12
Fever at baseline	**-0.627**	**.002**	**-0.588**	**.02**	0.088	.53	0.090	.56	-0.129	.22	-0.044	.69
Cough at baseline	-0.172	.62	0.018	.96	0.176	.49	0.108	.69	0.215	.26	0.206	.29
Weight loss at baseline	-0.276	.25	-0.122	.66	0.038	.82	0.013	.95	-0.081	.51	-0.157	.22

CONCLUSIONS

- HIV stigma is substantial among people with TB and may particularly affect younger persons.
- TB stigma has a disproportionate impact on individuals with HIV and is associated with food insecurity. Further work is needed to explore economic vulnerability and TB stigma.
- Further research may evaluate stigma effects on TB and HIV outcomes and wellbeing.

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