



Increasing burden of pulmonary tuberculosis in young women

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The tuberculosis (TB) burden in South Africa ranks seventh in the world, with an estimated incidence rate of 556 per 100 000 population.¹ Parallel to this epidemic, South Africa is also experiencing one of the worst HIV epidemics in the world.² HIV infection is distributed unevenly across the nine provinces, with KwaZulu-Natal consistently experiencing the highest prevalence.² The epidemic is best described as 'explosive' and occurs disproportionately among young women, with more than 60% of infections occurring in the 20 - 30-year age group.² As the epidemic matures there has been an increase in young adult morbidity and mortality that mirrors the observed HIV infection patterns.³ The objective of this study was to

investigate the temporal trends of pulmonary tuberculosis (PTB) at the Prince Cyril Zulu Communicable Diseases Clinic (CDC), an urban outpatient specialist TB facility in central Durban, KwaZulu-Natal. Data were extracted from the clinic's computerised register. The chi-square test for linear trend assessed changes in the distribution of PTB from 1998 to 2004. Data on age were categorised as 0 - 19 years, 20 - 39 years, and ≥ 40 years, and the effect of gender was examined separately for each age group because of the differential impact of the HIV infection by gender and age.²

The total number of new TB cases increased from 1998 to 2004, with an average annual increase of 13.3% per year (Table I). The total number of patient visits increased substantially, with an average annual increase of 15.2% per year ($p < 0.001$). Significantly more patients were either self-referred ($p < 0.001$) or referred from hospitals ($p < 0.001$). There was a downward trend in the rate per year of PTB cases, which proportionally decreased from 70% in 1998 to 53% in 2004 ($p < 0.001$). While more men than women were diagnosed with PTB, the proportion of men decreased from 68% in 1998 to 60% in 2004, while the proportion of women increased from 32% in 1998 to 40% in 2004 ($p < 0.001$). Of note is the difference in the proportion of PTB between men and women by age (Fig. 1); in the 20 - 39-year age group the proportion of women

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Table I. Temporal trends in tuberculosis cases seen at the Prince Cyril Zulu Communicable Diseases Clinic, Durban 1998 - 2004

	Year							p-value*
	1998	1999	2000	2001	2002	2003	2004	
Total number of clinic visits	65 980	69 882	82 222	84 443	113 556	140 337	149 409	< 0.001
Total number of new TB cases	5 614	5 781	7 399	7 883	9 128	8 909	8 476	< 0.001
Source of referral for all new cases of tuberculosis								
Self referred (%)	4 607 (82)	4 819 (82)	5 907 (80)	6 090 (77)	6 595 (72)	6 013 (67)	5 366 (63)	< 0.001
Referred from other clinics (%)	217 (4)	176 (3)	215 (3)	249 (3)	292 (3)	462 (5)	701 (8)	NS
Referred from hospitals (%)	790 (14)	786 (14)	1 277 (17)	1 544 (20)	2 241 (25)	2 434 (27)	2 409 (28)	0.001
Number of cases diagnosed as PTB (%)	3 977 (70)	4 164 (72)	5 001 (67)	5 236 (66)	5 606 (61)	5 031 (56)	4 528 (53)	0.001
Number of PTB case with positive sputum smears (%)	2 138 (54)	2 366 (57)	3 097 (62)	3 030 (58)	3 198 (57)	2 771 (55)	2 439 (53)	NS
Total number of men (%)	1 445 (68)	1 552 (66)	2 014 (65)	1 906 (63)	1 999 (62)	1 723 (62)	1 464 (60)	< 0.001
Total number of women (%)	693 (32)	814 (34)	1 083 (35)	1 124 (37)	1 199 (38)	1 048 (38)	975 (40)	< 0.001

* χ^2 for linear trend.
NS = not significant.

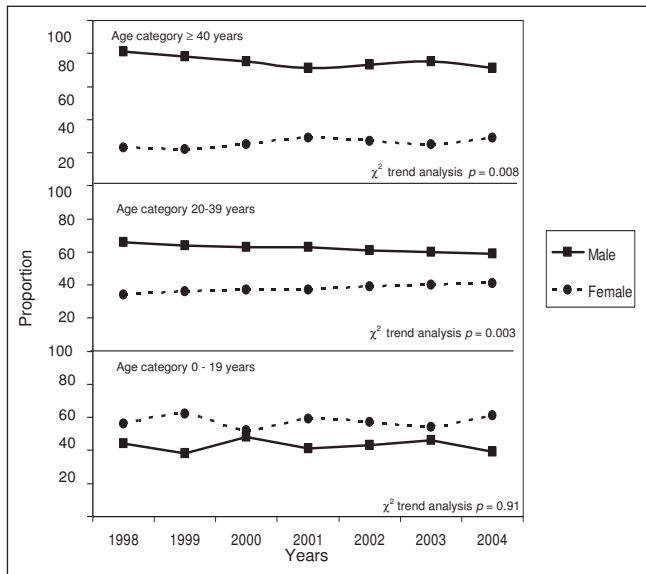


Fig. 1. Gender- and age-specific distribution of new sputum smear-positive cases of PTB, 1998 - 2004.

increased from 34% in 1998 to 40% in 2004 ($p = 0.003$) while the proportion of men decreased from 66% in 1998 to 60% in 2004 ($p = 0.003$). Multivariate analysis of the data stratified by gender and age demonstrated a significant increase in the number of PTB cases in women in the 20 - 39-year age group ($p = 0.003$) compared with men ($p = 0.008$).

Despite the implementation and ongoing investment of the National Tuberculosis Control Programme, the TB burden has increased. During the early stages of the HIV epidemic Floyd *et al.*⁴ illustrated an overall growth in the number of adult TB cases, with modelling predicting at least 2 - 3-fold increase

in the TB caseload with advancing HIV disease. Our data confirm this increase over time as the HIV epidemic matures. While studies have recognised differences in health-seeking behaviours, access to health care services and underreporting among men and women, of importance are the significant changes over time in the proportion of women with PTB. The significant upward trend in the number of PTB cases in young women in the 20 - 39-year age group reflects the gender and age groups most affected by the HIV epidemic and is consistent with the observed HIV seroprevalence patterns.³ Our data are also consistent with the recent mortality data, which have demonstrated higher mortality rates in women aged 25 - 29 years compared with men aged 30 - 49 years.⁵ Our study has two limitations. First, the notification rates are based on data from a single clinic, which may not reflect the notifications from other primary health care facilities, and secondly we obtained routine data, which may have biased the reporting. However, our data underscore the importance of surveillance of gender- and age-specific patterns of PTB especially in communities burdened by HIV and TB.

The study was approved by the Nelson R Mandela School of Medicine Research Ethics Committee and permission was obtained from the City Health Department, Ethekwini Municipality, Durban.

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