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INTRODUCTION:

- Lung cancer is a leading cause of mortality worldwide, yet limited data are available for South Africa.
- We aimed to describe the socio-demographic, risk factors, clinical characteristics, treatment modalities, and overall survival of lung cancer patients at two public hospitals in Johannesburg, South Africa.

METHODS:

Study Design and Population: A prospective cohort study included patients newly diagnosed with primary lung cancer enrolled in the Bristol Myers Squibb Foundation Chronic Respiratory Diseases study at Chris Hani Baragwanath Academic Hospital and Helen Joseph Hospital from 1 June 2018 to 31 May 2021.

Data analysis:

- Patient characteristics were analyzed by age (≤60 vs. >60 years).
- Multivariable Cox proportional hazard models assessed the impact of age and histology on survival.

RESULTS: DEMOGRAPHICS AND CLINICAL CHARACTERISTICS

TABLE 1: Socio-demographic characteristics, risk factors, and comorbidities by age categories of patients diagnosed with lung cancer in Johannesburg, South Africa, from 2018 to 2021.

Age in years, (Row, %)	≤60 years N=98 (41.5%)	>60 years N=138 (58.5%)	Total N=236 (100.0%)	P value
Gender: (Females)	19 (19.4)	53 (38.4)	72 (30.5)	0.002
Education				0.230
Primary school and below	20 (26.0)	32 (29.9)	52 (28.3)	
Secondary	52 (67.5)	61 (57.0)	113 (61.4)	
Tertiary	5 (6.5)	14 (13.1)	19 (10.3)	
Smoking cigarettes: (Yes)	72 (78.3)	110 (82.1)	182 (80.5)	0.475
Smoking cannabis: (Yes)	34 (34.7)	15 (10.9)	49 (20.8)	<0.001
Mining exposure: (Yes)	20 (22.0)	23 (18.3)	43 (19.8)	0.497
ECOG Performance Status Scale				0.201
0-1	26 (29.5)	28 (21.9)	54 (25.0)	
2-4	62 (70.5)	100 (78.1)	162 (75.0)	
Hypertension: (Yes)	18 (18.9)	60 (45.1)	78 (34.2)	<0.001
Diabetes: (Yes)	3 (3.2)	14 (10.4)	17 (7.4)	0.038
HIV Status: (Yes)	30 (31.9)	11 (8.3)	41 (18.1)	<0.001
Tuberculosis: (Current + Past)	16(17.4)	18(13.5)	34(15.1)	0.716*

TABLE 2: Disease characteristics and treatment by age categories of patients diagnosed with lung cancer in Johannesburg, South Africa, from 2018 to 2021.

Age in years, (Row, %)	≤60 years N=98 (41.5%)	>60 years N=138 (58.5%)	Total N=236 (100.0%)	P value
Histology: (NSCLC)	71 (94.7)	82 (84.5)	153 (89.0)	0.048*
Histological subtype (NSCLC)				0.016*
Adenocarcinoma	50 (66.7)	41 (42.3)	91 (52.9)	
Squamous cell	13 (17.3)	33 (34.0)	46 (26.7)	
Large cell carcinoma	6 (8.5)	7 (8.5)	13 (8.5)	
Others	2 (2.8)	1 (1.2)	3 (2.0)	
Staging SCLC				0.604*
Limited stage	0 (0.0)	2 (18.2)	2 (14.3)	
Extensive stage	3 (100.0)	9 (81.8)	12 (85.7)	
Clinical staging				0.311*
Stage 1	3 (3.3)	1 (0.8)	4 (1.9)	
Stage 2	3 (3.3)	8 (6.5)	11 (5.1)	
Stage 3	19 (20.7)	32 (26.0)	51 (23.7)	
Stage 4	67 (72.8)	82 (66.7)	149 (69.3)	
Chemotherapy: (Yes)	19 (24.4)	8 (6.5)	27 (13.4)	<0.001
Palliative care: (Yes)	83 (86.5)	116 (85.9)	199 (86.1)	0.908

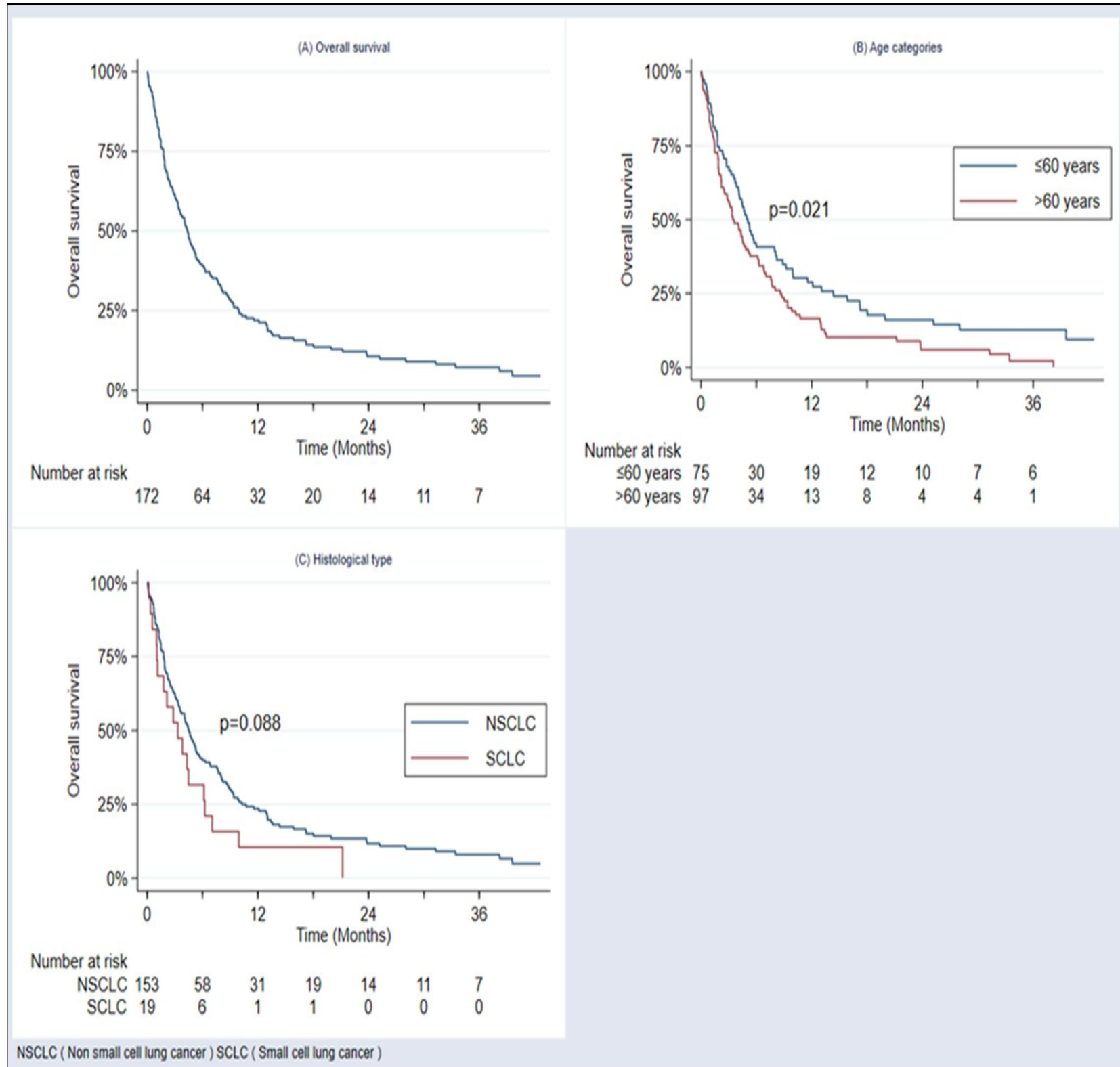


FIGURE 1: Overall survival in patients with lung cancer in Johannesburg, South Africa, from 2018 to 2021 by (A) Overall (B) Age and (C) Histological subtype.

TABLE 3: Factors associated with overall survival in lung cancer patients in Johannesburg, South Africa from 2018 - 2021: Univariate and multivariable analysis.

Characteristics	Died N=203 (Row %)	Univariate analysis Hazard ratio (95% CI)	P value	Multivariable analysis Hazard ratio (95%CI)	P value
Age					
≤60	81 (82.7)	1.00 (Reference)		1.00 (Reference)	
>60	122 (88.4)	1.42 (1.07 - 1.90)	0.017	0.83 (0.57 - 1.22)	0.345
ECOG PS					
0-1	45 (83.3)	1.00 (Reference)		1.00 (Reference)	
2-4	145 (89.5)	1.82 (1.30 - 2.55)	0.001	1.62 (1.05 - 2.49)	0.029
Diabetes					
No	183 (86.3)	1.00 (Reference)		1.00 (Reference)	
Yes	16 (94.1)	1.73 (1.12 - 2.95)	0.043	2.37 (1.20 - 4.67)	0.013
Chemotherapy					
No	156 (89.1)	1.00 (Reference)		1.00 (Reference)	
Yes	23 (85.2)	0.49 (0.32 - 0.76)	0.002	0.46 (0.27 - 0.78)	0.004
Palliative care					
No	19 (59.4)	1.00 (Reference)		1.00 (Reference)	
Yes	181 (91.0)	1.98 (1.23 - 3.18)	0.005	2.60 (1.32 - 5.12)	0.006

DISCUSSIONS:

- We found significant burden of lung cancer in South Africa, as anticipated in developing countries.
- Most patients were of African male descent, from a low income households , with exposure to only secondary education and below.
- Disparities in lung cancer survival between races have also been noted, with minorities and low-income patients less likely to receive aggressive therapy for lung cancer.
- This could be because of high tobacco use amongst males.
- We also note associations between low socio-economic status and Lung cancer, may be due to poor health seeking behaviors and poor access to health care.

CONCLUSION : The large number of late-stage diagnoses and low survival rates highlight the urgent need to expand on smoking cessation programmes, lung cancer screening, access to health care, and overall treatment in South Africa.

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