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آموزش مهارت های کاربردی در تدوین و چاپ مقاله
Deaths Rates in Public Hospitals of Eastern Cape Province of South Africa

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Abstract

Background: South Africa (SA) is experiencing a rapid epidemiologic transition as a consequence of political, economic and social changes. In this study we described, based on hospital data, the mortality patterns of Non communicable Diseases (NCD), Communicable Diseases (CD), the NCD/CD ratios, and the trends of deaths.

Methods: We conducted a cross-sectional survey of all deaths occurring in several public hospitals in the Eastern Cape Province of SA between 2002 and 2006. Causes of deaths were coded according to the ICD 10 Edition.

Results: A total of 107380 admissions responded to the inclusion criteria between 2002 and 2006. The crude death rate was 4.3% (n=4566) with a mean age of 46±21 years and a sex ratio of 3.1 men (n=3453): 1 woman (n=1113). Out of all deaths, there were 62.9% NCD (n=2872) vs. 37.1% CD (n=1694) with NCD/CD ratio of 1.7. The ratio NCD/CD deaths in men was 1.3 (n=1951/1502) vs. NCD/CD deaths in women of 1.9 (n=735/378). The peak of deaths was observed in winter season. The majority of NCD deaths were at age of 30-64 years, whereas the highest rate of CD deaths was at age< 30 years. The trend of deaths including the majority of NCD, increased from 2002 to 2006. There was a tendency of increase in tuberculosis deaths, but a tendency of decrease in HIV/AIDS deaths was from 2002 to 2006.

Conclusion: Non-communicable diseases are the leading causes of deaths in rural Eastern Cape province of SA facing Post-epidemiologic transition stages. We recommend overarching priority actions for the response to the Non-communicable Diseases: policy change, prevention, treatment, international cooperation, research, monitoring, accountability, and re-orientation of health systems.

Keywords: Mortality, Epidemiologic transition, Non communicable diseases, South Africa

Introduction

There are changes for mortality, Communicable Diseases (CD), and Non communicable Diseases (NCD) worldwide (1-6).

Sub-Saharan Africa shows several studies about poverty, industrialization, urbanization, and epidemiologic transition (6-14). In particular, significant changes in the delivery of health care in the public sector occurred since the end of apartheid in 1994. South Africa (SA) has also embarked in redressing past inequalities and improving access to, and quality of health care to all citizen of the country (13-15).

Among other issues, the Eastern Cape of SA, faces significant challenges with NCD research,
practice, and policy, basic equipment for effective
diagnosis and treatment of NCD; and adequately
trained health workers.
Therefore, the objective of this study was to iden-
tify, based on hospital data, the mortality rates of
NCD and CD, as well the epidemiologic transition,
and the trends of mortality.

Methods

Data in this study came from a survey of rural
Eastern Cape Province-wide. Data for the years
2002-2006 were considered.
The study protocol was approved by the Walter
Sisulu University Ethics Committee.
The Eastern Cape Province is located in the
south-eastern part of South Africa. The province shares
borders with the Free State province and Lesotho
Kingdom in the north, KwaZulu-Natal in the
north-east, the Indian Ocean along its south-eastern
borders, and Western and Northern Cape provinces in the West.
A multistage random sampling procedure had 20
districts in the province wide. We conducted a
cross-sectional survey between 2002 and 2006.
We evaluated all cases of deaths in each district,
not only for those who have come to the hospital.
Officer responsible of statistics in the district is
responsible for registration of both cases of death
in the hospitals or also other cases of death espe-
cially those who had never came to hospital.
Causes of deaths among the admissions were
coded to the 10th Revision of International
Classification of Diseases (ICD-10).
The variables of interest comprised of demo-
graphic (age and sex), months (season of Winter/June), NCD, CD, HIV/AIDS, tuberculosis,
Data were extracted from deaths registration us-
ing standardized procedures published by other
researchers (16-18).

Data and statistical analysis

Data were presented as frequencies (number),
proportions (%) for qualitative variables, and
mean± standard deviation for continuous variable.
The trends of mortality were done across the
months, ages, and the years 2002-2006. The
coefficient determination (R²) was equal to the short projections of deaths. The software SPSS
for Windows version 16.0 (SPSS Inc, Chicago, IL,
USA) was performed.

Results

For the 5-year period between 2002 and 2006, 107,380 admissions had complete data. Of these
hospital admissions, 4.3% (n=4,566) died and had
46±21 years.
Among all deaths, the sex ratio was almost 3.1
men (n=3,453): 1 woman (n=1,113). Out of all
deaths, 62.9% (n=2,872) were attributable to
NCD, while 37.1% (n=1,694) were attributable to
CD; the ratio NCD/CD being 1.7. The NCD had
22 deaths in age<30 years, 2,422 deaths in age 30-
64 years, and 428 deaths in age>65 years. There
was an inverse relationship between CD deaths
and ages: 1,345 deaths in age<30 years, 309 deaths
in age 30-64 years, and 40 deaths in age>65 years.
The ratio of NCD/CD deaths in men was
1.3 (n=1,951 NCD vs. 1,502 CD). The ratio of
NCD/CD deaths in women was 1.9 (n= 735
NCD vs. 378 CD). The peak of deaths was ob-
served in June (winter season) between 2002 and
2006 (Fig. 1).

Fig. 1: Relationship between deaths and winter
season

The trend of deaths including the majority of
NCD, had an increase with R²= 30.1% from 2002
to 2006 (Fig. 2). There was a tendency of an in-
crease of tuberculosis deaths (R²= 64.9%), but an
inverted curve of HIV/AIDS deaths tended to
decrease from 2002 to 2006 (R²= 25.4%) (Fig.3).
Discussion

The study investigated the extent and the changes of mortality patterns in Eastern Cape Province of SA with a profile of similar to that of countries facing epidemiological transition (19). However, the crude death rate in 2002 – 2006 from this study undertaken in hospitals was significantly lower than the double estimates for rural populations in India (20). NCD are currently the leading cause of death in rural India. This study also confirmed NCD to be the leading causes of death in Eastern Cape. The data reported globally (2-6), in all South Africa (11) and in other developing countries (20) also incriminated NCD as the leading causes of mortality. According to WHO, NCD were responsible of 60% (35/58 million) of all global deaths in 2005 (21). In this study conducted in one of the poorest province of SA (15), 62.9% of deaths were attributed to NCD and 37.1% to CD. These findings were similar with 53.8% of all deaths attributed to NCD and 36.4% due to CD in the all developing countries (5).

In its report, the WHO identified a long time ago observed the “growing prevalence of NCDs accounting for the largest proportion of the global burden of disease and even outpacing infectious diseases in all developing countries with the exception of sub-Saharan Africa” (22). There however remains a constant challenge that even in the light of body of evidence, public health policies and practices globally have consistently been either non-existent or slow in responding to NCDs, with the priority continuing to be on communicable diseases control. Two main reasons for this trend were identified by Glasgow (23) viz. compared to communicable diseases, NCDs play a non-significant role in both high and low politics, no immediate security threat is posed by NCDs compared with HIV/AIDS and hemorrhagic fevers that have been seen destroying even security forces. Secondly, the rising prevalence of NCDs in low and middle income countries is viewed as attributable to western lifestyle
These mechanisms may explain the out

-2006 period

epidemiologic transition stages were

renal failure, cancer, and

al

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years (6). 2006, males were more

other

and outside South

s

-2006, end of Apartheid) than that expe-

ries increase blood pres-

ure, cholesterol, fibrinogen and erythrocyte num-

-33). These mechanisms may explain the out-

breaks of deaths observed in this study with CVD

and respiratory diseases as leading causes of death.

This study showed a significant social gradient in

which patients living in the poor rural areas had

higher rates of mortality than advantaged patients

from urban areas. The same social gradient was

previously demonstrated by Grunewald et al. in

the poor sub district of Khayelitsha from Cape

Town, Western Cape Province of South Africa

(34).

These findings will play an important role in

managing patients and shaping public-health pol-

icy in Eastern Cape Province and in other re-

sources limited settings in and outside South

Africa.

Training of health professionals with a new ap-

proach to primary health-care system, adequate

management of NCD, and priority actions for the

response to the NCD crisis are urgently needed in

this poor province and globally. These changes in

mortality patterns will provide insight into the

evolving course of health transition in Easter-

Cape province. Public-health Leadership, preven-

tion, treatment, international cooperation, moni-

toring and accountability are thus at a cross-

roads of Eastern Cape Province.

As the stages of epidemiologic transition occur

ongoing, modification of the Eastern Cape health

system is required to ensure that the services pro-

vided address the main diseases suffered by the

population (20). Among the communicable causes

of death that were still widespread in Eastern

Cape Province, tuberculosis was prominent be-

cause of drug resistance. HIV/AIDS may well

have been a contributor to other cases of deaths in

infectious diseases such as tuberculosis and me-

ningitis as well as in NCD such as CVD, meta-

bolic syndrome, diabetes mellitus and cancers (8,

globalization including consumption of unhealthy

western diets. This latter theory thus supports

non-public health view that NCDs are individuals’

responsibility because they are self created (24-25).

The present study showed that this province has

witnessed a dramatic change from a burden of
disease dominated by mortality from infectious
causes to degenerative and chronic causes. This

epidemiologic transition (26) as reported in other

low- and middle-income countries (27-29), has

been experienced in shorter time frame (10 years

after 1994, end of Apartheid) than that expe-

rienced historically in rich countries (26). In this

study, Intra- Midst-, immediate Post-, and ad-

vanced Post- epidemiologic transition stages were

defined in all patients, in men, and in women. East-

ern Cape province is in stage of receding pan-
demics, which was characterized by CVD and its

risk factors predominated by hypertension,

 congestive heart failure, renal failure, cancer, and

stroke. CVD was commoner in men, while cancer

was more frequent in women.

The important determinants of mortality in East-

ern Cape Province during the 2002 – 2006 period

were male gender, aging, rural area, and winter.

In our survey of 2002 – 2006, males were more

vulnerable than females as reported by several stu-
dies from the literature (30).

Aging in this population facing demographic

transition was associated with higher risk of

mortality. The improvement of sanitation in South

Africa after 1994 (end of apartheid) may explain

the control of perinatal deaths, maternal mortality

and death related to infection diseases (13). 80% of

CVD deaths occur in developing countries, mainly

individuals aged 30-69 years (6).

Winter was associated with higher risk of mortal-

ity among the patients from Eastern Cape as well

observed in other settings. Heunis et al. investi-
gated the short-term relationship between winter

temperatures and cardiac diseases mortality in

Cape Town, Western Cape province of South

Africa (31). They found a strong lagged relation-

ship between extreme temperatures/large daily

variations of temperatures and above-average

mortality rates. Data from Spain showed the effect

of extreme winter temperature on mortality in

Madrid for people aged>60 years (32). Poor

people from Eastern Cape Province live in huts or

shuck without windows neither heater. Cold

temperatures give rise to bronchoconstriction,

which can enhance previously existing pulmonary
diseases. Cold temperatures increase blood pres-

ure, cholesterol, fibrinogen and erythrocyte num-

bers (33). These mechanisms may explain the out-

breaks of deaths observed in this study with CVD

and respiratory diseases as leading causes of death.

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Training of health professionals with a new ap-

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bolic syndrome, diabetes mellitus and cancers (8,
Antiretroviral therapy (HAART) may impact on decline in HIV/AIDS deaths. WHO recommends State Members to pay attention to formulating and testing frameworks for chronic care systems, and to the skill-set that is required of multipurpose health professionals to support long-term patient-centered care. For this reason, Cambodia has demonstrated the feasibility of integrating care for HIV/AIDS with NCD in chronic diseases clinics (35).

The first step to combat the NCD epidemic should encompass an extensive and comprehensive research on the dimensions and actual burden of NCD in Eastern Cape. Thorough understanding of the dynamics of epidemiologic transition is important to achieve a serious appraisal of primary health-care systems in this province. Research to establish the Cost, value and feasibility of implementation of the framework will have the way for international support (36).

The Lancet NCD Action Group and the NCD Alliance propose the delivery of the following priority interventions: tobacco control, salt reduction, improved diets and physical activity, reduction in hazardous alcohol intake, essential drugs and technologies.

Although in Eastern Cape province, the burden of mortality due to CD and HIV/AIDS has often overshadowed that due to NCD, there is evidence now of a shift of attention to NCD by identifying and addressing modifiable risk factors (lifestyle changes), screening, diagnosing, treating and follow-upping patients with NCD. Primordial prevention by educating the general population may promote health. Essential components of these Implications include: effective surveillance mechanisms supplemented by focused research; generating broad interest and consensus; mobilizing Leadership and commitment at all levels; involving local and international Expertise; building on existing efforts; and seeking integrated, multidisciplinary and multi-sector approaches (37).

**Limits of the study**

This study is limited to some degree because of its setting, design and methods. The findings from this hospital-based survey are difficult to be generalized to the Eastern Cape general population. In limited resources settings, hospital data may guide the public policy and research. The cross-sectional design is not able to demonstrate a causal association in the findings.

Several settings use hospital-wide mortality rates to evaluate the quality of hospital care (38), although the usefulness of this metric has been questioned (39).

**Conclusion**

This study contributes to understand the changes of mortality patterns in a poor setting facing Post-epidemiologic transition stages. There is a positive and significant association between male gender, aging, winter season, rural residence, and higher rates of all deaths.

NCD are the leading causes of mortality in this poorest and rural province of South Africa. Health policies and programs should learn from the observed and unique pattern of mortality with a rapid progression of epidemiologic transition in general and in women in particular. Clinical Implications and Perspectives for Public Health (Prevention, Health Promotion, and Interventions) should be adequately based on comprehensive information about the extent and nature of mortality in Eastern Cape. An urgent reorganization of the Eastern Cape Health delivery is needed to enable the implementation of Evidence-Based activities that can curb the rising of NCD.

**Ethical considerations**

Ethical issues (Including plagiarism, Informed Consent, misconduct, data fabrication and/or falsification, double publication and/or submission, redundancy, etc) have been completely observed by the authors.

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The authors declare that they have no competing interests.
References


5. Sanitary transition


Available at:  [http://ijph.tums.ac.ir](http://ijph.tums.ac.ir)
23. Glasgow SM. The private life of public health; managing chronic disease in an era of neoliberal governmentality. [PhD diss], Univ. Maryland, USA; 2005.


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