Prevalence of Cigarette Smoking Among Secondary School Students—Budapest, Hungary, 1995 and 1999

MMWR. 2000;49:438-441
2 tables omitted

THE AVERAGE PER CAPITA CIGARETTE consumption in Hungary is among the highest in the world (World Health Organization [WHO], unpublished data, 1997). In 1999, the Metropolitan Institute of State Public Health and Public Health Officer Service, Budapest, Hungary, collaborating with CDC, conducted a survey of cigarette smoking among secondary school students aged 14-18 years in Budapest (1999 population of Budapest: approximately 2 million), similar to a survey conducted in 1995. This report summarizes the survey findings, which indicate that current smoking among secondary school students in Budapest increased from 36% in 1995 to 46% in 1999.

The objective of the 1999 survey was to compare changes that had occurred since the 1995 survey in the prevalence of current cigarette smoking, in the factors associated with current cigarette smoking, and in the smoking behaviors of current cigarette smokers (i.e., number of cigarettes smoked per day and number of days smoking occurred on school property). Among the 80,352 secondary school students in Budapest in 1999, 67,253 attended traditional high schools and 13,099 attended vocational/technical schools. Of 222 secondary schools (grades 9-12), 21 traditional high schools and nine vocational/technical schools were selected with a probability proportional to enrollment size. Classrooms in the 30 schools were selected randomly. All selected schools and classrooms agreed to participate, and all students in the selected classrooms were eligible to participate.

From March through May 1999, 2615 (85%) of 3092 eligible students completed a pretested, standardized questionnaire that included questions about tobacco use translated from the U.S. Youth Risk Behavior Survey. Of the 2615 completed surveys, 2434 (93%) were from students aged 14-18 years; 24 (less than 1.0%) were age 14 years, a number too small for meaningful analysis. Therefore, analysis of data from 1999 was limited to students aged 15-18 years. The 1995 data for students aged 15-18 years were compared with 1999 data using Epi Info version 6.0. Prevalence odds ratios (POR) and 95% confidence intervals (CIs) were calculated using CSAMPLE to account for the complex survey design.

Among the 2410 students, 1148 (46.0%) (95% CI=42.4%-49.5%) reported current smoking. Prevalence of current smoking among male and female students was similar (44.9% and 46.9%, respectively) (POR=0.9; 95% CI=0.8-1.1). Students aged 18 years were more likely to be current smokers than students aged 15 years (51.8% and 37.2%, respectively) (POR=1.8; 95% CI=1.3-2.6). Prevalence of current smoking was higher among vocational/technical students than traditional high school students (60.2% and 43.1%, respectively) (POR=2.0; 95% CI=1.5-2.6); among students whose friends smoked than those whose friends did not smoke (51.9% and 39.4%, respectively) (POR=1.9; 95% CI=1.5-2.3). The prevalence of current smoking was similar among students who discussed issues related to smoking and health in any of their classes and those who did not receive such instruction (44.8% and 48.6%, respectively) (POR=0.9; 95% CI=0.7-1.1). Among students who were current smokers, 23.5% smoked greater than or equal to 11 cigarettes on the days that they smoked, 46.7% smoked daily, and 36.9% smoked on school property on greater than or equal to 10 days during the preceding month.

From 1995 to 1999, current smoking increased among female students (35.2% versus 46.9%), 17-year-old students (39.4% versus 49.4%), 10th graders (32.8% versus 45.3%), and traditional high school students (31.3% versus 43.1%). Although the prevalence of daily smoking was similar among male and female students in 1999 (46.2% and 46.4%, respectively), daily smoking among female students increased from 32% in 1995 while the rate for male students remained stable. The percentage of secondary school students in Budapest who smoked greater than or equal to 11 cigarettes per day during the preceding month increased from 1995 to 1999.

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CDC Editorial Note: The survey findings indicate that the prevalence of current cigarette smoking among secondary school students aged 15-18 years in Budapest increased significantly from 1995 to 1999. In 1999, the prevalence of current smoking among adolescents aged 15 years was 37.2%. This finding is consistent with smoking rates...
among adolescents aged 13–15 years during 1999 in the Russian Federation, Moscow, where 33.4% were current smokers. The estimated 46% smoking prevalence for students in Budapest in 1999 is higher than the estimated 28.4% prevalence for U.S. high school students (grades 9–12) who participated in the 1999 National Youth Tobacco Survey.

In 1999, the Hungarian Parliament passed stronger legislation to enforce restrictions on smoking in the workplace and other public places. However, factors that may have contributed to the increased prevalence of smoking among youth in Budapest include a lack of regulation of the sale of cigarettes to minors until 1999 (T. Szilagyi, Health 21 Hungarian Foundation, personal communication, 2000), fewer advertising restrictions since 1997, free distribution of cigarette samples, weak health warnings, availability of contraband cigarettes, low fines for advertising violations, and lack of enforcement of existing regulations.

The findings in this report are subject to at least one important limitation. These data apply only to youth who attended secondary school and are not representative of all persons in this age group (e.g., secondary school students who dropped out and approximately 80% of gypsy children who do not attend secondary school). To better understand increasing prevalence rates of smoking among youth in Budapest and other central and eastern European countries, national health agencies must expand and evaluate tobacco prevention efforts and continue surveillance of trends in tobacco use among youth. The Global Youth Tobacco Survey (GYTS), sponsored by WHO’s Tobacco Free Initiative and CDC, will be conducted in Budapest by the end of 2000 and throughout Hungary in 2001. GYTS will evaluate a wide range of variables, including knowledge and attitudes about tobacco, exposure to environmental tobacco smoke, familiarity with prosmoking and antismoking media messages, and exposure to tobacco-use prevention curricula in schools. These efforts, along with Hungary’s development of a plan for tobacco control as part of the Framework Convention on Tobacco Control, are important steps in curbing the increase in smoking among secondary school students in Hungary.

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Case Findings
Case 1. In October 1998, a 44-year-old woman with multiple sclerosis and no known exposure to a person with active TB had TB diagnosed on the basis of a positive culture result. Cerebrospinal fluid revealed no signs of infection, but the culture grew M. tuberculosis at 7 weeks. Her chest radiograph was normal, and a tuberculin skin test (TST) was not documented. Anti-TB therapy was not initiated because no development or progression of symptoms consistent with TB occurred. The cerebrospinal fluid was restested in the same laboratory (7 weeks after the original specimen was obtained) and revealed a stain with 1+ acid-fast bacilli (AFB). The patient was started on anti-TB medications. The culture for the second specimen was negative for TB. This patient had received 4 months of anti-TB treatment at the time of the investigation.

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Case 2. A 38-year-old woman with a history of reactive airway disease and angioedema was taken to a local emergency department with shortness of breath and cough. Her chest radiograph was normal, and a TST was not documented. A sputum specimen obtained at that time was AFB smear-negative, but M. tuberculosis culture was positive at 6 weeks. Although the patient had recovered after treatment for acute asthma, she was started on anti-TB treatment. Treatment was discontinued after 2 weeks when health-care providers determined her illness was not TB.

Summary Findings
A list of the 11 case-patients with an isolate with a fingerprint matching H37Ra was compiled, and information on the origin of each case-specimen was obtained. Investigators reviewed hospital, clinic, and health department records for each case-patient to establish the clinical events leading to TB diagnosis. Investigators visited the laboratories where the 11 specimens were processed to interview laboratory personnel about specimen processing techniques and to review laboratory logs for mycobacterial specimen testing. The 11 case-patients had TB diagnosed and reported during 1996-1998. Mean age of patients was 60 years (range: 36-81 years); eight were women, and three were human immunodeficiency virus (HIV)-positive. Eight cases were classified as pulmonary and three as extrapulmonary. Seven patients had abnormal chest radiograph findings, and two had documented positive TSTs. All case-patients received partial or full-course therapy for TB; treatment durations ranged from 2 weeks to 6 months. Seven patients had contact investigations performed; four of the 32 contacts identified were tested and treated for latent TB infection. Each case met at least one criterion for suspected laboratory cross-contamination with M. tuberculosis. In addition, each of the eight pulmonary patients had clinical courses suggestive of an illness other than TB (i.e., bacterial pneumonia [four], reactive airways disease [two], interstitial lung disease [one], and congestive heart failure [one]).

The laboratory investigation revealed that the 11 specimens were processed during February 1996-October 1998 at four laboratories in New Jersey (three hospital laboratories and one commercial laboratory). Each of the laboratories either used the strain H37Ra or participated in laboratory proficiency testing using H37Ra; however, laboratory logs did not include the specific times when H37Ra was handled on the same day as any of the 11 specimens. In addition, personnel at the laboratories could not recall instances when the control strain may have been mishandled. The average number of specimens collected for AFB culture per patient was four (range: two to 12). All culture-positive patient specimens were smear-negative. Mean number of days to M. tuberculosis growth for patient specimens was 38 (range: 17-54 days).

CDC Editorial Note: These misdiagnosed cases of TB illustrate the need for heightened awareness of laboratory cross-contamination with M. tuberculosis. Clinicians and health department personnel did not suspect laboratory cross-contamination in these 11 cases; therefore, this oversight would not have been detected without the use of DNA fingerprinting through NTGSN. The putative source of cross-contamination for the 11 cases, H37Ra, is a laboratory control strain that is used weekly in some laboratories for routine drug susceptibility testing. H37Ra also is distributed to mycobacteriology laboratories as part of a biennial proficiency testing required by the Clinical Laboratory Improvement Amendments. The control strains for proficiency testing often are processed simultaneously with patient specimens, but many laboratories do not document consistently specific times when proficiency testing is conducted. As a result, it is difficult to prove that the control strain is the source of cross-contamination in a specific case. In addition, several opportunities exist for specimen carryover, spillage, or inadvertent contamination during specimen processing, but these occurrences are difficult to discover retrospectively. Given these obstacles in discovering cross-contamination, NTGSN has established criteria for suspected laboratory cross-contamination of TB (CDC, unpublished data, 1998).

Reliance on clinical judgment and the presence of corroborating clinical signs and symptoms play pivotal roles in interpreting laboratory data. Systemic symptoms of fever, loss of appetite, weight loss, weakness, night sweats, and malaise are common but not specific for TB. Other signs and symptoms vary according to the site involved. In pulmonary TB, prolonged cough with or without sputum production, and ensuing pulmonary inflammation and necrosis are manifest. Chest radiograph findings of adenopathy, lung infiltrates, and pleural reaction are important correlates in the diagnosis, but these findings may be due to illnesses other than TB, particularly in the presence of HIV. These scenarios often create clinical dilemmas when initial laboratory data support a TB diagnosis. A positive TST is evidence for TB, but the positive predictive value depends on the cut-off value used to determine a positive test and the prevalence of TB infection in the population. In the appropriate clinical setting, the presence of a positive AFB smear should raise suspicion for TB; however, a positive smear with a concomitant inconsistent clinical history may represent the presence of H37Ra, a nontuberculous organism, such as Mycobacterium avium complex, or environmental contamination with a ubiquitous acid-fast species such as Mycobacterium gordonae. H37Ra and nontuberculous organisms are indistinguishable from pathogenic strains of M. tuberculosis on a laboratory smear. For some patients, signs, symptoms, and test results are lacking or conflict-
ing, as illustrated by the case–patients described in this report. If discrepancies exist among clinical and laboratory data, and at least one criterion for laboratory cross-contamination is met, an investigation should ensue to determine whether the patient has a potential TB exposure, whether specimens from the laboratory strain or other TB patients were processed simultaneously with the specimen in question, and whether performance of DNA fingerprinting is appropriate. To identify occurrences and sources of cross-contamination, it also is important for mycobacteriology laboratories to determine the DNA fingerprint pattern of the M. tuberculosis control strain used in their respective laboratories.

The patients described in this report received unnecessary treatment for TB and more than half had a contact investigation initiated. Recognition by health-care professionals and laboratorians of the potential for laboratory cross-contamination with M. tuberculosis should help avert erroneous TB diagnoses and avoid unnecessary treatment and associated toxicity. In addition, this awareness assists TB control programs in avoiding unnecessary patient care costs and futile contact investigations and helps maintain accurate TB case reporting.

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"Suspected laboratory cross-contamination with M. tuberculosis may include at least one of the following: (1) patient’s clinical course is inconsistent with TB; (2) single positive M. tuberculosis culture with no AFB seen in any specimen; (3) culture-positive specimen from a different patient processed or handled on the same day has an identical DNA fingerprint, and no epidemiologic connections exist between patients; (4) laboratory control strain has an identical fingerprint; and (5) time to growth detection is greater than 30 days.

### Costs of Smoking Among Active Duty US Air Force Personnel—United States, 1997

**MMWR. 2000;49:441-445**

#### Tabl 1 omitted

**SMOKING IS THE LEADING CAUSE OF PREVENTABLE DISEASE AND DEATH IN THE UNITED STATES.**

The health consequences of smoking impose a substantial economic toll on persons, employers, and society. Smoking accounts for $50-$73 billion in annual medical-care expenditures, or 6%-12% of all U.S. medical costs. The costs associated with lost productivity also are extensive. In 1997, approximately 25% of male and 27% of female active duty Air Force (ADAF) personnel aged 17-64 years were smokers. A 1997 retrospective cohort study was conducted among ADAF personnel to estimate the short-term medical and lost productivity costs of current smoking to the U.S. Air Force (USAF). This report summarizes the results of the study, which indicate that current smoking costs the USAF approximately $107.2 million per year: $20 million from medical-care expenditures and $87 million from lost workdays.

Study participants completed a health assessment survey and were followed for 1 year; then researchers calculated participants’ use of medical care and health-related lost work time (i.e., time spent on smoke breaks, days spent in the hospital, and time away from duty station for outpatient clinic visits). Total expenditures among current smokers and never smokers were used to compute population-attributable fractions (PAFs) (i.e., the fraction of expenditures attributable to ADAF members who currently smoked). Data were collected from 5164 active duty TRICARE Prime enrollees aged 17-64 years in Arkansas, Louisiana, Oklahoma, and Texas who completed the Health Enrollment Assessment Review (HEAR) survey during September-December 1996, and who remained enrolled in the health plan the year following the HEAR survey. The HEAR instrument is a voluntary survey given to all TRICARE Prime enrollees. Self-reported demographic data were obtained by written questionnaires from the Air Force personnel system; smoking status, weekly alcohol consumption, frequency of aerobic exercise, and body mass index data also were obtained through self-administered questionnaires from HEAR. Respondents were classified as current, former, or never smokers. Results for former smokers were not included in this study. Inpatient and outpatient visits, clinical diagnoses, bed days, and encounter costs were obtained from the Corporate Executive Information System (CEIS) and the TRICARE Management Activity. Prevalence estimates of all currently smoking ADAF personnel during 1997 were based on a linear interpolation of results from the 1995 and 1998 U.S. Department of Defense (DoD) Survey of Health Related Behaviors Among Military Personnel. Prevalence estimates in the DoD survey were 22% and 49% higher than HEAR among men and women, respectively. The DoD survey of risk behaviors is anonymous and is assumed to reflect current smoking in the ADAF population more accurately than the HEAR survey, which is not anonymous.

An empirical model was used to compare medical-care expenditures and lost
work time among current smokers and never smokers. Men and women were modeled separately because of the influence of pregnancy-related events. A log-linear Poisson regression model was used to compare the rates of accumulating medical-care costs. Sex-specific rate ratios (RRs) were adjusted for age, race, weekly alcohol consumption, frequency of aerobic exercise, and body mass index. Adjusted RRs from HEAR were combined with current smoking prevalence data from the DoD survey to estimate PAFs of expenditures associated with current smoking for all ADAF personnel. The use of two distinct datasets in the PAF formula precluded computing confidence intervals (CIs). The average margin of error (one half the width of the CI around the mean) was 3.6% for the RR estimates and ±1.1% for the prevalence estimates. The RR margins of error and smoking prevalence estimates indicate the overall stability of the PAFs. Smoking-attributable expenditures (SAEs) among men and women were calculated by multiplying the PAFs by total medical-care costs for each sex. Total medical-care costs for all ADAF personnel were $347 million and were estimated by using CEIS data to extrapolate the sex-specific medical-care costs for the study cohort to the entire ADAF population. Productivity costs were estimated using 1996 age-specific and sex-specific salary and benefit data among ADAF personnel. Hospital days, outpatient clinic visit time, and excess break time for current smokers were included; nonhospital sick days were excluded.

Smoking-attributable medical-care costs for ADAF personnel were approximately $20 million, representing approximately 6% of the total annual Air Force medical system expenditures. In 1997, current smoking was associated with 893,128 lost workdays: 739,374 among men and 153,755 among women. Assuming 250 workdays per year, this lost work time represents a loss of approximately 3573 full-time equivalent positions (FTEs) in 1997: 2957 among men and 615 among women. Lost workdays represent approximately $87 million in annual productivity losses: $76 million among men and $11 million among women.

**CDC Editorial Note:** Current smoking among ADAF personnel is associated with large medical expenditures and lost productivity each year, particularly among men. The 6% SAF of medical expenditures is within the 6%-12% range of recent SAF estimates of total U.S. medical costs. DoD estimated that current smoking among all U.S. military health system beneficiaries cost the DoD an estimated $930 million in 1995: $584 million in annual health care expenditures and $346 million in lost productivity. Among ADAF personnel, smoking-attributable productivity losses were more than four times the cost of medical care: 6.7 times among women and 4.1 times among men. The number of lost FTEs is larger than the number of FTEs on active duty at 35 (40%) of 87 USAF installations.

The findings in this report differ from previous cost-of-smoking estimates because the study population in this report excludes persons aged greater than or equal to 65 years; the costs for former smokers were excluded. Consequently, medical costs among this younger population are a much smaller percentage of total smoking-attributable costs than in other studies. The exclusion of results for former smokers also lowers the costs of smoking estimates for women compared with men. Pregnancy-related events were a large portion of health-care use among ADAF women. Because a substantial proportion of women quit smoking during pregnancy and many others conceal their smoking status during pregnancy, the SAEs PAFs among women who are classified as current smokers may be artificially low; this may account for the lower costs of smoking for women relative to men. In 1993, smoking-attributable medical costs for the United States were approximately 51% lower for women than men.

The findings in this report are subject to at least four limitations. First, the study cohort may not be representative of all ADAF personnel. Second, study participants knew their HEAR survey responses would become part of their medical record. This might have reduced the rate of self-reported smoking and other risk behaviors when compared with anonymous ADAF surveys, however, anonymity may be only one factor influencing differences in reported risk behaviors. Third, the medical-care costs and productivity losses of former smokers were not included. Finally, the study excluded lost productivity on days that ADAF personnel were on convalescent leave or confined to quarters; a large number of work days may have been missed because of less severe illnesses that did not require hospitalization. Limitations two, three, and four may underestimate the costs of smoking among ADAF personnel.

These results support USAF and DoD efforts to decrease the prevalence of smoking among ADAF personnel. Smoking-attributable lost work time is particularly important for USAF operational commanders because it adversely affects military readiness; however, the impact of smoking on productivity also is relevant to civilian employers. The prevalence of smoking among ADAF members is approximately the same as among the U.S. population aged 18-64 years. However, because of physical training requirements, smokers in the ADAF population are probably healthier than smokers in the civilian population. If so, average productivity losses to civilian employers could be larger than those found in this military group. Costs related to tobacco use are largely preventable. Implementing comprehensive tobacco-control programs remains an effective way to reduce associated medical and productivity losses.

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Satellite Broadcast on Preparing for the Next Influenza Pandemic

MMWR. 2000;49:449

A Public Health Training Network (PHTN) satellite broadcast titled “Update: Preparing for the Next Influenza Pandemic,” is scheduled for July 13, 2000, from 9 to 11 AM and rebroadcast from 1 to 3 PM eastern time. This broadcast will update local, state, and national plans; describe the integration of local, state, and federal partners in pandemic influenza planning; and describe roles for antiviral drug use and triage and infection control measures. Additional information is available on the World-Wide Web at http://www.cdc.gov/phpn/pandemic/pandemicflu.htm, by telephone at (404) 639-8799, or by e-mail at cwilkins@cdc.gov. This program is a production of the PHTN and CDC’s National Immunization Program and National Vaccine Program Office.

Cause-Specific Adult Mortality: Evidence From Community-Based Surveillance—Selected Sites, Tanzania, 1992-1998

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Mortality data are a standard information resource to guide public health action. Because Tanzania did not have a representative mortality surveillance system, in 1992 the Adult Morbidity and Mortality Project (AMMP) was established by the Muhimbili University College of Health Sciences, the Ministry of Health of Tanzania (MOH), and the University of Newcastle upon Tyne, United Kingdom. The purpose of the surveillance system is to provide cause-specific death rates among adults in three areas of Tanzania and to link community-based mortality surveillance to evidence-based planning for health care. This report describes the results of AMMP surveillance during 1992-1998, which indicated that human immunodeficiency virus infection/acquired immunodeficiency syndrome (HIV/AIDS) was the leading cause of death reported by decedents’ relatives and caretakers for adults of both sexes in all study areas, and suggests that a range of other causes of death exist across the three surveillance sites.

The AMMP surveillance project was conducted in a low-income and in a middle-income section of the city of Dar es Salaam, which is part of a region ranked by the Tanzanian government among the 50% most deprived in Tanzania (i.e., Morogoro Rural District in Morogoro Region), and in part of a region ranked as one of the 15% least deprived (i.e., Hai District in Kilimanjaro Region). These areas were selected to compare urban with rural conditions and high-income with low-income conditions. Population denominators were determined by semiannual census rounds in Dar es Salaam and annual census rounds in Morogoro Rural and Hai. Mortality monitoring was conducted by trained volunteers who reported deaths to a team of supervisors. Supervisors then conducted “verbal autopsy” interviews with the decedents’ relatives and caretakers to determine the cause of death. Family and caretakers were used as sources to determine cause of death because up to 80% of deaths occur outside health facilities and most deaths are not medically certified. The interviews usually occurred within a month of a supervisor’s receipt of the death report. The completed interview forms were coded by three physicians using the International Classification of Diseases and Related Health Problems, 10th Revision.

During 1992-1998, 10,517 persons aged 15-59 years died in the three locations; a cause of death was assigned by AMMP in 95% of cases. Death rates per 100,000 population were calculated for persons aged 15-59 years and for men and women by study area. Cause-specific death rates were calculated for persons aged 15-59, 15-29, 30-44, and 45-59 years, by sex, and by study area; probability of death by age 60 years at age 15 years was calculated by sex and study area. Death rates were standardized to World Health Organization standard populations. The probability of death by age 60 years at age 15 years was 45% for women and 42% for men in Dar es Salaam, 43% for...
women and 51% for men in Morogoro Rural, and 26% for women and 37% for men in Hai.

In addition to indicating 6-year total death rates and death rates from the 10 leading causes of death for men and women, the data reflected large variations in cause-specific death by sex and geographic area and are ranked according to an age-adjusted death rate for each district; no causes of death were excluded from ranking. HIV/AIDS, tuberculosis (TB), malaria, and diarrhea were major causes of death. HIV/AIDS and TB were particularly high in Dar es Salaam, especially among women aged 15-29 years (325 and 62 per 100,000, respectively) and men aged 30-59 years (1199 and 426, respectively). The HIV/AIDS death rate was 608 among men aged 30-44 years in Dar es Salaam, and the TB death rate was 232. HIV/AIDS was the leading cause of death among persons of both sexes aged 15-59 years; the rate ranged from 246 among men in Morogoro Rural to 534 among women in Dar es Salaam. However, stroke and TB death rates were 3.0 and 6.7 times higher, respectively, among women in Dar es Salaam than among women in the other areas, and anemia death rates in Morogoro Rural were 3.0 times higher than in the other districts. In Morogoro Rural, the rate of maternal mortality was 114, with a maternal mortality ratio of 1183 per 100,000 live births, more than eight times the official regional estimate (AMMP, unpublished data, 2000). Among men, malaria, acute diarrheal disease, and anemia death rates were 3.0, 4.3, and 21.7 times higher, respectively, in Morogoro Rural than in the other two districts. Stroke and cancer death rates for both sexes were higher in Dar es Salaam and Hai than in Morogoro Rural. Among men, injury was a substantial cause of death, and injury rates for both sexes were higher in rural than urban areas.

CDC Editorial Note: AMMP is being developed as a prototype of a routine mortality data collection system to be integrated into the local health system of Tanzania. The data from the selected districts show that substantial variation in overall and cause-specific deaths exist in conditions of extreme poverty relative to other countries. In 1997, Tanzania had the third lowest gross national product per capita in the world. In 1990, estimates of the probability of death at age 15 years by age 60 years in sub-Saharan Africa were 39% for men and approximately 30% for women. On the basis of data in this report, the probability of death is considerably higher for the three study areas; the data also show that in these areas important differences exist by sex and geography. Infectious diseases predominated in Dar es Salaam and Morogoro Rural, and noninfectious disease and injury rates were greater in Hai than in Dar es Salaam and Morogoro Rural.

In addition, the data reflect age-specific patterns of HIV/AIDS and the need for HIV prevention intervention and improved home care for persons with HIV/AIDS. Malaria and diarrhea also should be public health priorities, as should noninfectious diseases that represented major causes of death, particularly stroke, cancer, and diabetes for the populations residing in Dar es Salaam and Hai. Stroke death rates among persons aged 45-60 years in Dar es Salaam are several times higher than rates in the United Kingdom or North America.

The results of this study are subject to at least three limitations. First, because the study population has had little to moderate formal education, age reporting may be inaccurate, especially among older age groups. Second, the exact cause of death may not have been known, particularly for conditions such as anemia, septicemia, gastrointestinal disorders, and some cancers. Third, an unknown amount of overlap may exist among HIV/AIDS, TB, chronic diarrhea, and other causes of death.

The high mortality reported from these three areas highlights the need to establish adult health as a priority in Tanzania. For many of the important causes of death, effective and inexpensive preventive or treatment measures are available, including condoms, insecticide-treated bednets, oral hydration therapy for acute diarrhea, treatment for hypertension, directly observed therapy for TB, improved nutrition, and access to clean water. MOH has used these data to design a National Essential Health Package, a minimum standard of care that all districts in Tanzania will be expected to provide by 2010.

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