

# ME-JAA

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## Editorial

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### Author

**Dr Abdulrazak Abyad**

Chief editor

This is the fourth issue this year which is rich with papers from the region. A paper from Iran looked at Naming Performance in Farsi-speaking demented patients. Naming is a mental process requiring representations of semantic, phonologic and morphosyntactic information of our mental lexicon. The author studied 20 patients with DAT compared with 17 patients with aphasia using a reference group of healthy elderly people. All the participants were examined using A Farsi Aphasia Naming Test developed by Nilipour (2004). He concluded that naming difficulties in DAT patients are mostly arising from semantic memory deficits, whereas in aphasic patients the problem has a lexical-phonological origin.

A retrospective study of causes and prognosis of Jaundice in the elderly, from the UK, looked at the causes and prognosis of jaundice in patients over 65 years of age presenting to a district general hospital. Ninety-three patients were studied (mean age 75 years, range 65-96). The authors concluded that mortality was highest among patients with high bilirubin and low albumin at presentation.

A paper from Bangladesh looked at Potential Gain of Life Expectancies for Elimination of Leading Causes of Death. The authors stressed that communicable diseases, which include diarrhoeal and infectious diseases are the major causes of low life expectancy in our population. If we are able to eliminate diarrhoeal diseases from our community, expectation of life will be sharply increased about 1.43 years at birth. In order to compute the inherent peculiarities of deaths due to diarrhoeal and infectious diseases and their combined effect in presence of all other cause of death, single decrement life tables were constructed.

A retrospective study from Malaysia looked at Organic psychiatric disorders in older persons. The sample was collected over 3 months and consisted of 10 patients above 60 years of age with features fitting those conditions, conventionally labeled at the time as Organic Brain Syndromes (OBS). We found that OBS in hospitalized older people was common (29.41%) and the detection of these syndromes was poor, taking almost 5 days for a psychiatric referral to be made. Clinical presentations heterogeneously varied and the majority of cases were in a delirium (60%) due to various causes. Only low dosages of treatment were required to treat the symptoms,

except in those who had a premorbid psychiatric disorder.

A paper from Pakistan looked at the prevention of cardiovascular disease. The author stressed that coronary artery disease is a major and growing contributor to morbidity, mortality and disability in the South Asian countries including Pakistan. Cardiovascular disease profile in Pakistan shows the presence of emerging and advancing diseases such as coronary artery diseases (CAD) and cerebrovascular accidents (CVA) and of established and receding diseases such as hypertension and diabetes, which are also risk factors for CAD and CVA. The author added that the majority of people have modifiable risk factors for cardiovascular disease that are easily preventable. Prevention efforts are required early in life, using strategies for behavioral modification and health promotion.

In the population aging feature, a paper from Bangladesh discussed the salient feature of the Aged Population. The present study revealed that 65 percent of elderly are illiterate and about 78.5 percent of elderly women are illiterate. About 25.4 percent of older persons are non-working. This study also showed that 77.85 percent of the older persons of Bangladesh are suffering from various chronic diseases.

## Jaundice in the elderly: A retrospective study of causes and prognosis

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### ABSTRACT

**Background:** Jaundice is a common medical problem in the elderly. In view of the associated comorbidities, the optimum approach for investigation and management is uncertain.

**Objective:** The aim of this study was to determine the causes and prognosis of jaundice in patients over 65 years of age presenting to a district general hospital.

**Design:** Retrospective study

**Methods:** The biochemistry computer database was used to identify all patients admitted over a 6 months period, to the medical and surgical department, with a serum bilirubin concentration of > 70 umol/l. The case notes of 93 patients were reviewed to identify the extent of investigations and outcome.

**Results:** Ninety-three patients were studied (mean age 75 years, range 65-96). All patients had ultrasound scan of the abdomen<sup>(30)</sup>, had abdominal CT. Diagnostic + therapeutic endoscopic retrograde cholangiopancreatography (ERCP) was performed in<sup>(41)</sup> and liver biopsy in<sup>(12)</sup> patients. Results: Cholelithiasis<sup>(22)</sup>, metastatic liver disease<sup>(10)</sup>, alcoholic liver disease (ALD)<sup>(9)</sup>, carcinoma of the head of pancreas<sup>(9)</sup>, congestive cardiac failure (CCF)<sup>(9)</sup>, cholangiocarcinoma<sup>(6)</sup>, drug induced<sup>(5)</sup>, unknown cause<sup>(5)</sup>, septicemia<sup>(4)</sup>, cold agglutinin haemolytic anaemia<sup>(3)</sup>, primary sclerosing cholangitis<sup>(2)</sup>, post-operative jaundice<sup>(2)</sup>, and miscellaneous conditions<sup>(7)</sup>. The cholelithiasis group was successfully treated by ERCP in 86% of patients.

**Conclusion:** Our study concurs with previous studies, but the mortality rate was higher, probably because we studied patients with moderately severe jaundice. The mortality rate was highest among patients with high bilirubin and low albumin at presentation. However, many patients were treated successfully by ERCP.

### Introduction

Jaundice is an important symptom apparent to both the patient and doctor. The underlying diseases range from totally benign conditions to diseases with very poor prognosis<sup>[1,2]</sup>.

Diseases affecting the gallbladder and bile ducts occur commonly in the elderly. By age 70 cholelithiasis is the most common disorder affecting these organ systems and its sequelae, choledocholithiasis, are found in 33% of the population in the United States<sup>[3]</sup>.

In the elderly ERCP is a well-tolerated procedure and often the most appropriate treatment of choledocholithiasis with relief of jaundice in 98% of patients obviating the need for emergency biliary tract

surgery in the elderly who may have other conditions that may contribute to significant morbidity and mortality.

The aim of our study was determining the causes and prognosis of jaundice in patients over 65 years of age.

### Material and Methods

The biochemistry computer database was used to identify all patients with a bilirubin concentration of > 70 umol/l. The case notes of 93 patients who were admitted to our district general hospital from August 98 to January 1999 were reviewed. Our hospital has 1200 beds with a catchment area of 300,000.

Within the number of 93 patients there were 45 women (48%) and 48 men (52%) of an age ranging from 65 to

96. The mean age was 74.9 (SD  $\pm$ 6.76). All patients had bilirubin level  $>$  70  $\mu$ mol/l.

Further diagnostic procedures included ultrasound, ERCP, CT scans and biopsy of organs. Cancer diagnosis was confirmed by post-mortem examination in a few cases.

## Results

### Presentation:

In addition to jaundice, other frequent symptoms were: abdominal aches(36), nausea<sup>(24)</sup>, vomiting(21), itching of the skin(20) and periodic increase in the coloration of urine and lighter colour stool (32 patients).

Twenty-eight patients (30%) noted more than 10% decrease in body weight.

### Investigations:

Investigations performed included abdominal ultrasound (all patients), Abdominal CT 30 patients), ERCP (41) and liver biopsy liver biopsy (12 patients).

The mean serum bilirubin and albumin are shown in table 1.

### Management and outcome:

The causes of jaundice is tabulated (see table 1) ERCP was needed in 19 patients of the cholithiasis group (86%) and was successful in all of them except one. The procedure was uneventful except for self-limiting pancreatitis that occurred in 2 patients. Ascending cholangitis occurred in 3 patients and was treated with parenteral antibiotics. Two of the latter patients died with severe septicemia.

The primary tumour in the metastatic group of patients was identified in 7 patients (70%). The sources include adenocarcinoma of the stomach and colon (3 patients each), and one patient with breast cancer. Seven patients died within one month of presentation with jaundice, and 3 died within 3 months. Three patients required palliative biliary stenting.

Patients in the alcoholic liver disease group were chronic heavy drinkers and presented with recurrent alcoholic hepatitis. Within six months of follow up 6 (70%) recovered completely, but 2 patients were readmitted with alcoholic hepatitis after starting to drink. Three patients (30%) died during their acute presentation. The causes of death include staphylococcal septicemia and severe oesophageal variceal bleeding.

Three patients with carcinoma of the head of pancreas had successful palliative stenting via ERCP. One patient needed a combined procedure for relieving the obstruction (ERCP and percutaneous transhepatic cholangiography). Two patients had successful Whipple's

procedure and were alive 6 months later. Three patients were too ill and were treated conservatively. Five of the 9 patients with this diagnosis died within 6 months (55%).

Six patients in the CCF group were treated with intensive heart failure therapy and were still alive 6 months after the initial presentation with jaundice. Three patients died within a month of presentation.

Cholangiocarcinoma patients presented with abdominal pain and severe obstructive jaundice. All 6 patients had successful biliary stenting via ERCP except one patient who needed both external and internal drainage procedures. Four patients (66%) died within 4 months of presentation.

## Discussion

The most frequent individual cause of jaundice in our study, that included patients with moderately severe jaundice was choledocholithiasis (24%).

Subsequent causes were variable types of accompanying cancer including metastatic liver cancer (11%), carcinoma of the head of pancreas (10%), and cholangiocarcinoma (6%). The commonest benign causes were alcoholic liver disease (10%) and congestive cardiac failure (10%). Previous literature has shown that the most common cause of jaundice was choledocholithiasis<sup>[4,5]</sup>.

Our study has shown that the proportion of patients with gall stones and those with malignancy is higher than in a similar study from London and Stockholm[6]. The latter study showed jaundice in 144 cases among 120,000 observed persons and its causes were as follows: gall stone disease (20.1%), cholangiocarcinoma (1.4%), hepatoma (0.6%), malignant obstruction and metastasis (6.9%), and pancreatic carcinoma (7.6%). This study included patients younger and older than 65 and we studied patients with all grades of severity.

Choledocholithiasis is a significant problem in the elderly especially in those patients who present with gall bladder disease and such a condition should be considered before planning or embarking on surgical treatment. In the general population 5% of patients presenting with cholecystitis have coexisting bile duct stones. In the elderly however this figure rises to 10-20%<sup>[7]</sup>.

In addition in elderly patients who have undergone an emergency cholecystectomy the incidence of bile duct stones approaches 50 %. ERCP is a diagnostic and therapeutic procedure that is well tolerated in the elderly and operative intervention such as cholecystectomy is not required.

The length of stay in hospital is limited to 2-3 days and

in the published results the overall complication rate was 3 % [8]. The mortality rate incurred among the elderly in surgical series is 4-10% for elective procedures but this figure rises to 20% in emergency operations [9]. ERCP was performed with success in removing the stones in 20 (91%) of our patients with complete recovery. Two patients presented with ascending cholangitis and septicaemia and died.

#### **Metastatic liver disease:**

This group of patients presented with painless obstructive jaundice, weight loss and low serum albumin. All patients died within three months of presentation. This concurs with a previous study which showed that the prognosis of such patients is dismal especially when they present with obstructive picture and hepatic insufficiency [10]. Malignant disease of the pancreas usually accounts for a significant proportion of cases with jaundice as the presenting symptom. In a study by Madden et al, of 140 patients with obstructive jaundice 28% were due to malignant disease and 16% were caused by carcinoma of the pancreas including periampullary carcinoma [11].

Among patients who were diagnosed as carcinoma of the pancreas in our study, 50% were still alive and well 6 months following ERCP and palliative biliary drainage procedures.

#### **Congestive cardiac failure:**

This is a common treatable cause of jaundice in the elderly. With improved treatment of severe heart failure now available, the development of fibrosis and ultimately cirrhosis now occur very rarely [12]. Among patients who presented with jaundice due to CCF, 70% responded very well to intensive management were discharged home and were alive 6 months later. Thirty percent of patients who had severe (NYHA 4) CCF died within 2 months of presentation with jaundice.

#### **Alcohol:**

Between 1 and 6% of older individuals are heavy drinkers and the alcoholism rate is higher for elderly men than women (1:5) [13]. A recent study from the United States national hospital data revealed that among patients aged 65 and over, alcohol-related hospitalisations occurred as frequently as those for myocardial infarction [14]. Abstinence from alcohol is more common in the elderly, and the prognosis for patients with late-onset alcoholism is usually better than for those with early-onset [15,16].

Alcoholism is a chronic relapsing condition. Elderly patients are not different, they will also have slips and return to drinking. This may bring guilt and lead to avoiding follow-up. Therefore physicians have to give

them a non-judgemental invitation to return for treatment and to provide education on the adverse effects of alcohol.

Our finding is consistent with previous studies. Eight patients (70%) recovered completely after abstaining from alcohol. Three patients with severe alcoholic hepatitis died despite supportive management. The average LOS in this group was high at 23 days with a mortality of 30%. The causes of death were variceal bleeding and staphylococcal septicaemia.

#### **Cholangiocarcinoma:**

Bile duct cancer occurs in the elderly. 25% of patients are over 65 years of age. The clinical features are similar to hepatocellular carcinoma except that jaundice is more frequent with hilar tumours. Cholangiocarcinoma is difficult to diagnose with both ultrasound and CT scans that show the obstruction [17,18]. The survival can be prolonged if the tumour is diagnosed early. The mean length of stay in our patients was 14.6 days and all patients had successful biliary stenting via ERCP.

#### **Drugs:**

Abnormal liver tests caused by drugs is common in the elderly and may be responsible for up to 40% of cases [19]. Although adverse drug reactions are said to be commoner in the elderly, it is possible that this is caused by increased prescribing in the elderly and the fact that elderly patients have more intercurrent illness with impaired cardiac or renal function which may directly or indirectly potentiate the effects of some drugs on the liver [20].

In our patients, the drug induced hepatitis and jaundice were caused by amiodarone, cyproterone acetate, azathioprine, haloperidol and co-amoxiclav. All recovered after cessation of the drug except those who were on cyproterone acetate and haloperidol.

#### **Conclusions**

Our study has shown that obstructive jaundice is a common problem in the elderly. Our findings of the cause of jaundice in this age group of patients presenting to a district general hospital is different from other studies, probably because we have chosen to study moderately severe jaundice with a moderately high serum bilirubin. The mortality of the age group studied was high at 50% indicating that jaundice is a serious problem in the elderly who may have coexisting medical problems. We have also concluded that patients who presented with high serum bilirubin and low albumin had high mortality.

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**Table 1:** presents the final diagnosis based on clinical examination, investigations, the mean LOS, serum albumin and serum bilirubin at presentation for each diagnosis

<b>Diagnosis</b>	<b>No of patients</b>	<b>%</b>	<b>Mean age</b>	<b>Mean LOS serum</b>	<b>Mean albumin</b>	<b>Mean bilirubin</b>
Cholilithiasis	22	24	76.8	11	33.6	148.8
Metastatic liver disease	10	11	74.3	14.8	29	217.9
Alcoholic liver disease	9	10	71.5	23.6	29.4	124.5
Carcinoma of the head of pancreas	9	10	76.7	22.8	32	160.2
Congestive cardiac failure	9	10	75.5	15.5	34.5	96.4
Cholangiocarcinoma	6	6	79	14.6	33.1	287
Drug induced	5	5	80.6	15.4	30	135.4
Cause not found	5	5	72.2	20.8	33.8	164
Septicaemia	4	4	69	55.5	34.7	119.7
Cold agglutinin haemolytic anaemia	3	3	76.6	30.8	25.8	76
Primary sclerosing cholangitis	2	2	78	27	31	139
Post-operative	2	2	73	35	19	116.5
Primary biliary cirrhosis	1	1	66	1	34	115
Chronic pancreatitis	1	1	67	34	30	99
Hepatitis B	1	1	71	1	41	101
Budd-Chiaree syndrome	1	1	68	3	39	206
Chronic lymphatic leukaemia	1	1	69	7	42	72
Post-blood transfusion	1	1	68	34	39	70
Haemolytic anaemia following CABG	1	1	68	10	19	140

\* LOS: Length of stay

## Organic Psychiatric Disorders in Older Persons : A Comparison of Thoughts

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### ABSTRACT

A primary, retrospective study was done to determine the frequency, and to describe the patterns, of presentation of delirium, dementia and mood disorder in the elderly. The sample was collected over 3 months and consisted of 10 patients above 60 years of age with features fitting those conditions, conventionally labeled at the time as Organic Brain Syndromes (OBS). We found that OBS in hospitalized older people was common (29.41%) and the detection of these syndromes was poor, taking almost 5 days for a psychiatric referral to be made. Clinical presentations were heterogeneously varied and the majority of cases were in a delirium (60%) due to various causes. Only low dosages of treatment were required to treat the symptoms, except in those who had a pre-morbid psychiatric disorder. Finally, symptom resolution was achieved (30%) only where the medical conditions causing the OBS were reversible, as is expected. This cost-effective study found that OBS in hospitalized older people was common, was frequently diagnosed late and had a varied presentation.

**Key words:** Delirium, Dementia, Depression, Pseudodementia, Post-stroke dementia.

### Introduction

‘Organic Brain Syndrome’ (OBS), in the conventional nosology, refers to diseases of the brain presenting with psychiatric symptoms. This most commonly refers to delirium and dementia. Patients diagnosed with OBS account for approximately 20% of all first admissions to mental hospitals. Over 50% of geriatric patients in mental hospitals fall into this category, and as much as 10-20% of the elderly population in the community may be similarly affected. Different and distinct organic brain syndromes exist and each of these entities is based on a unique clinical presentation with a more or less specific aetiology, with each having its own distinctive pathology and prognosis. OBS may differ from case to case depending on the combination of aetiological factors. Although not a specific neurological diagnosis, it remains a standard diagnostic category and a justification for the

use of the term is as an abbreviated phrase referring to the full range of abnormal mental symptoms commonly associated with definable neurological disease<sup>1</sup>. Although the term Organic Mental Disorder is no longer used in the Diagnostic and Statistical Manual - 4th Edition (DSM-4)<sup>2</sup>, because it incorrectly implies that ‘non-organic’ or ‘functional’ mental disorders do not have a biological basis, it should be stressed that OBS are defined in psychological or psychiatric terms, and not in neurologic terms, and that they carry no specific aetiological implications and are purely descriptive<sup>3</sup>. However, this term is still widely used in clinical practice here, much to the dismay of academicians, and it proves to be a common ‘error’ when referrals are made, thus prompting us to have this study done to determine whether referrals of the term ‘possible OBS’ were indiscriminately, and loosely, used. The recognition of certain clusters of symptoms as organic will alert the

psychiatric clinician to the possibility of non-functional disease. To separate organic from functional is an essential step in the assessment of patients, but proper management ultimately requires further refinement of diagnosis. To group all of these patients together indiscriminately masks any potentially beneficial or harmful effect of a particular agent on a subgroup of them. Therefore, the use of specific diagnoses has a beneficial effect in that although most organic mental disorders cannot be reversed, a small number of cases are potentially treatable. Failure to consider specific entities subsumed by the diagnosis of OBS may result in missing some treatable causes of dementia<sup>1</sup>.

OBS in the older person constitutes a neglected area of neurology, geriatrics and psychiatry. Concern for elderly patients with organic brain disease, especially the chronic variety, has grown among psychiatrists and other physicians in recent years because these disorders have increased in absolute number in society, which has a steadily increasing population of individuals over 65. Chronic medical diseases that often lead to psychiatric problems in the medically ill elderly, are cerebrovascular disease, Parkinson's, Alzheimer's and other neurological diseases, cardiovascular disease, lung, kidney and liver diseases and arthritis. Medications, the use of which increase with age, should not be taken lightly and should always prompt a careful search for drug toxicity and the interactive effects of medications. Auditory and visual impairments arising from degenerative diseases of the eyes and ears justifies special attention as they may impair responsiveness to the interpersonal and social environment, increase feelings of vulnerability among elderly persons and cause hallucinations in the affected sensory modality in some patients.

Finally, falling and fall-related injuries increase dramatically with age, particularly in those over 75 years of age. Head injuries with neurobehavioural complications may initiate a downward spiral leading to death<sup>4</sup>. We, retrospectively, conducted a very simple study to determine the frequency, and describe the patterns of presentation, by which OBS manifest in the elderly in our setting. We also incorporated numerous and lengthy facets of discussion to compare the thoughts and outlook between the old and the newer literature, particularly for the benefit of the Medical Officer and Trainee Psychiatrist or Internist when dealing with elderly patients and to stimulate personal research into this area, considering this study was conducted at no cost whatsoever and involved only a small number of patients.

## Methods

A total of 34 patients were referred to the Consultation-Liaison (C-L) Services of a tertiary medical centre over a 3-month period. All cases were assessed within 3 hours of receiving the referral form and a detailed mental

state examination was done that included assessment of perceptual disturbances, thought content and cognitive functioning which encompassed orientation, immediate recall, recent and remote memory, as well as attention and concentration. An evaluation of the putative central nervous system was then done and when organicity was evident, a diagnosis of OBS was accorded as the term was still predominantly used in our setting then. After defining 60 years and older as the geriatric age group, we selected the 10 patients falling into this category to be the focus of this study. Further information regarding the onset of symptoms and subsequent management was obtained from the patient's treatment notes. The most likely triggering factor for OBS in each patient was identified and DSM-4 was used for coding of the disorders. The findings were finally entered into a semi-structured questionnaire consisting of demographic data (age and sex) and descriptive data (duration of symptoms before referral was made, Axis 3 diagnosis, presence of underlying psychiatric disorder and previous psychiatric contact, liaison psychiatry diagnosis, presence of perceptual disturbances, orientation and cognitive functioning, types of psychiatric treatment administered, presence of total symptom resolution upon discharge and compliance to follow-up). As controversial from present day studies as this communication may be, the discussion of this study tries to merge the comparison of thoughts from the former ideology of what constituted OBS and the present perception of this entity and subsequently, the importance of addressing and managing it well.

## Results

### 1) Demographic data:

a) Age - The ages of the 34 patients in the original sample ranged from 16 to 86 years. Of the 10 aged 60 years and above (29.41%), the mean age was 68.0 years.

b) Sex - 4 were male and the other 6 were female.

### 2) Descriptive data:

a) Duration of symptoms before referral - The mean length of time these patients were symptomatic before referral was made was 4.7 days.

b) Axis 3 diagnoses - These 10 patients suffered from a variety of medical, surgical and orthopaedic illnesses. (Table 1).

c) Underlying psychiatric disorder - 4 of the 10 patients had premorbid psychiatric illnesses and they were :

- Dementia
- Simple deteriorative disorder
- Mental retardation with Bipolar affective disorder
- Major depression.

d) Previous psychiatric contact - Only 2 of them had previously seen a psychiatrist and they were the ones with :

- Mental retardation with Bipolar affective disorder
- Major depression.

e) Liaison psychiatry diagnosis - The respective DSM-4 diagnoses were given to the patients. (Table 2).

f) Orientation - All 10 were disorientated to time, only 2 were disorientated to place (Uremic delirium and Vascular dementia) and 4 were disorientated to person (Delirium due to Metastasis, Hyperglycaemic delirium, Vascular dementia and Post-operative mood disorder).

g) Cognitive functioning - 6 had impaired immediate recall (Uremic delirium, Post-ictal delirium, Delirium due to Metastasis, 2 with Vascular dementias and Post-operative mood disorder). All 10 had impaired short-term memory. Only 1 (Post-operative delirium) had intact long-term memory. All 10 had impaired attention and concentration.

h) Perceptual disturbances and thought disorder - The 5 of them mentioned below experienced the following:

- Post-operative delirium - Visual and auditory hallucinations, derealization
- Post-ictal delirium - Visual and auditory hallucinations, paranoia
- Delirium due to Metastasis - Visual and auditory hallucinations
- Hyperglycaemic delirium - Grandiosity
- Vascular dementia - Auditory hallucinations, persecutory delusions.

i) Psychiatric treatment - Only those 2 with previous psychiatric contact and the one with a previous psychotic disorder required medication at relatively large doses and these consisted of Haloperidol 10mg b.d., Sulpiride 200mg nocte, Risperidone 3mg b.d. and Citalopram 10mg daily. The rest required only small doses of neuroleptics, anxiolytics and antidepressants.

j) Total symptom resolution upon discharge - Only 3 were completely asymptomatic after commencement of treatment and upon discharge. They were the ones who suffered from Uremic delirium, Post-operative delirium and Post-operative mood disorder.

k) Follow-up - All 10 were non-compliant to follow-up and only the one with Vascular dementia and underlying mood disorder came to our Walk-in clinic months later to replenish her original psychiatric medication.

#### **Table 1:** Axis 3 diagnosis

- \* End stage renal failure and Cerebrovascular accident
- \* Diabetes mellitus and Ischaemic heart disease
- \* Intertrochanteric fracture with Avascular necrosis of right hip
- \* Multiple myeloma with Insulin-dependent diabetes mellitus
- \* Primary lung carcinoma with Bone metastasis
- \* Diabetic ulcer
- \* Diabetic foot
- \* Cerebrovascular accident
- \* Cerebrovascular accident
- \* Cerebrovascular accident

#### **Table 2** Liaison psychiatry diagnosis

- \* 293.0 - Delirium due to Uremia
- \* 293.0 - Delirium due to Post-operative state
- \* 293.0 - Delirium due to Post-ictal state
- \* 293.0 - Delirium due to Brain metastasis
- \* 293.0 - Delirium due to Diabetes mellitus
- \* 293.0 - Delirium due to Diabetes mellitus
- \* 290.42 - Vascular dementia with Delusions
- \* 290.43 - Vascular dementia with Depressed mood
- \* 290.40 - Uncomplicated Vascular dementia
- \* 293.83 - Mood disorder due to Post-operative state

#### **Discussion**

In this study, 60 years of age and above was considered as the geriatric age group. This is in accordance with guidelines on the definition of age for elderly patients taken from the Proceedings of the First National Symposium on Gerontology, 1995. We found that almost 30% of patients suffering from OBS were in the geriatric age group, with a mean age of 68 years. The females had preponderance over the males. The average age of our patients with OBS was lower compared to a study by Rudberg et al (1997), where the average age of their subjects was 75.2 years, with 13% of their population over the age of 85 years<sup>6</sup>, and a 2-year local study, where the mean age was 75.5 years, and 21.4% of the patients were above 65 years<sup>7</sup>.

It was also evident that these syndromes were poorly recognized as it took almost 5 days of symptoms before a psychiatric referral was made. While hospital physicians have been repeatedly criticized for failing to detect delirium and dementia in elderly medical inpatients, Harwood, Hope and Jacoby (1997) scrutinized medical notes and concluded that the physicians in their study hospital had detected the majority of patients with cognitive impairment of clinical significance. And even if physicians detect as few as half of those found to have cognitive impairment later, it is uncertain whether the cases missed are of clinical significance<sup>8</sup>. Particularly in the case of delirium, the diagnosis in some cases may be problematic, especially with changing definitions, since the time course can be quite long and because of the variability of symptoms<sup>6</sup>.

As patterns of delirium are different, so too are their causes. Cerebrovascular accidents dominated the picture as the commonest cause of OBS in our study. Complications arising from Diabetes mellitus constituted the 2nd commonest cause. Most of the patients suffered from delirium as the cause of their confusional states. 6 groups of patients have a high risk of developing a delirium and they are elderly patients, post-cardiotomy patients, burns patients, patients with pre-existing brain damage like dementia and strokes, patients with drug dependency who are experiencing withdrawal and patients with Acquired Immunodeficiency Syndrome (AIDS).

As age advances, the risk increases, with persons aged 60 or over usually cited as the highest risk group (Lipowski, 1980, 1990). While studying the natural history of mental disorders in older people, Sir Martin Roth (1955) reported acute confusional states among psychiatric patients in 7.5% of patients aged 60-69, 9% in patients aged 70-79 and 12% in patients over age 80. Bedford (1959) reported that 80% of the 5000 patients aged 65 years or over admitted to the Oxford Geriatric Unit during an 8-year period had confusional states. Inouye et al (1989) and Francis et al (1988) reported that 23% and 25.3%, respectively, of patients over the age of 70 were delirious during hospitalization.

The differential diagnosis of delirium is so extensive that there may be a tendency to avoid the search for aetiologies. It is also important to realize that confusional states, particularly in the elderly, may have multiple causes.

Each potential contributor to the delirium needs to be pursued and reversed independently<sup>9</sup>. In a case-controlled prospective study, George et al (1997) identified the causes of delirium and found that the commonest cause to be infection. 25% of patients had multiple potential causes of the delirium.

There was also a significantly higher level of vision and hearing problems in patients with delirium. Presumably, sensory deprivation makes elderly patients more predisposed to develop delirium<sup>10</sup>. Koponen (1989) found clear organic aetiologies in 87% of delirious patients and also found that patients who became confused because of psychological and environmental events were severely demented<sup>9</sup>.

Katzman and Karasu estimated that the senile form of Alzheimer's Disease ranked as the 4th or 5th most common cause of death in the US as early as in 1975<sup>11</sup>. The prevalence of Alzheimer's disease shows that around 5% of those affected are 65 years and above and 20% of those over 85 years are affected at any one time.

However, the prevalence of dementia among the Chinese 65 years and older has been found to be lower than those found in Western countries and in Japan.

There is an estimated 6% prevalence rate of dementia among the elderly Malays in an urban settlement in Malaysia as compared to 4% in Malays and 2.3% in Chinese staying in Singapore<sup>12</sup>. Much work in the past 3 decades has been devoted to understanding the pathophysiologic mechanisms underlying the obscure dementing disorders for which, up to recently, no specific treatment was available.

Seltzer and Sherwin (1978), distinguished 2 major divisions within the general class of organic syndromes - the 1st was a group of patients whose symptoms chiefly involved one category of psychological function (e.g. memory) and were highly correlated with focal pathology of the brain. They were termed 'circumscribed neuropsychiatric syndromes'.

The 2nd group of patients had multiple neuropsychological deficits. Their symptoms were less easily correlated with focal disease and the underlying lesions were usually multi-focal or widespread. The general term 'dementia' was applied to this group<sup>1</sup>. Tomlinson et al (1970) found that degenerative diseases played a far more important role in the genesis of dementia than did vascular disease.

Fisher (1968) said that dementia due to cerebral infarction is usually manifested by abrupt onset, stuttering course, and symptoms and signs of focal neurological dysfunction. According to him, slowly progressive dementia (in the absence of acute episodes and focal neurological signs and symptoms) rarely results from cerebrovascular disease, except in the patient with prolonged, sustained hypertension<sup>11</sup>. When dementia begins in the pre-senile period due to pathognomonic morphological changes in the elderly, it may be labeled Alzheimer's disease, senile dementia, or senile dementia Alzheimer's type.

The current view is that the clinical diagnosis of dementia should be seriously questioned when thorough morphologic study does not account for the clinical picture.

Pseudodementias are too common and too accurate in their mimicry of true dementia to permit diagnostic complacency. Also, delirium may be easily misdiagnosed as dementia, especially in the elderly, in whom the diagnosis of dementia is often accepted too quickly and uncritically<sup>11</sup>.

A number of our patients in this study (40%) had

previous mental disorders but only half had seen a psychiatrist before. Although only 1 of them had a functional depressive illness, this elderly group would be susceptible to developing depression. Depression is the most frequently encountered mental disorder in the elderly; it is estimated that more than 10% of the elderly population suffer from major depression with a considerable proportion of the remainder experiencing depressive illness or depressive symptoms. This may well be an underestimate since many elderly patients present with non-specific complaints such as somatic, cognitive and behavioural symptoms and may, therefore, be incorrectly diagnosed and treated. Also, depression in older persons is frequently more severe, more chronic and more likely to be resistant to treatment than in younger patients<sup>13</sup>. Kiloh (1961) demonstrated that pseudodementia was particularly common in late life depressive disorders.

Similar findings were subsequently reported by Cavenar et al (1979), Wells (1979) and Caine (1981). Folstein and McHugh (1978) argued that depression can give rise to a dementia which, although reversible, probably has a true organic basis and should therefore, not be labelled as 'pseudo'. McAllister and Price (1982), Reifler et al (1982) and Shraberg (1979) argued that the concept of pseudodementia oversimplifies the division between cognitive and affective disorder. They believed that depression and organic brain impairment often occur in parallel and that this co-occurrence gives rise to the phenomenon of pseudodementia<sup>13</sup>.

Although the nature of their underlying medical conditions were varied, all of our patients had in common, global cognitive impairment. All were disorientated to time and had impaired short-term memory and attention and concentration. The relationship between cognitive impairment and depression in older persons is complex. Cognitive impairment associated with depression may herald future dementia and there is an increased rate of depression in patients with mild dementia<sup>8</sup>. Miller (1975) reviewed the literature on cognitive deficit in depression and concluded that there is general intellectual impairment, as well as deficiencies in memory and learning.

Dementia would be found more in the depressed elderly than in the depressed young. There is an interaction or multiplicative effect of age and depression on cognitive performance. An interaction effect of this type could arise if depression magnified the effects of aging. The changes in the brain found in normal aging might overlap with those found in depression, producing an especially strong cognitive deficit when they occur together.

Mildly demented subjects are more prone to depression

than the elderly with normal brain function. This sort of effect could also arise if depression greatly magnified the effects of mild dementia but had weaker effects on cognitive performance in the normal elderly. McAllister (1983) concluded that cases with depressive pseudodementia were significantly older than cases with pseudodementia associated with other psychiatric disorders. Nonetheless, it is known that the diagnosis of dementia in cases of depression can occur in the pre-senium as well. Marsden and Harrison (1972), Nott and Fleming (1975) and Ron et al (1979) have all reported that a small percentage of cases first diagnosed as presenile dementia later turn out to be depression. Folstein and McHugh (1978, 1979), using the Mini-Mental State Examination (MMSE), found that scores of depressed patients tend to fall markedly after 60 years of age, but not in all cases.

Furthermore, the MMSE scores of depressives aged over 65 overlap in range with that of demented subjects with Alzheimer's disease and stroke, but many elderly depressives still score outside the demented range<sup>14</sup>.

There were similar types of perceptual disturbances in those patients who experienced psychotic features. Hallucinations were basically both visual and auditory. Thought disorder in the form of delusions was mainly paranoid in content. Although these organic conditions were acute and generally not transient in the majority of them, this group required only low doses of medication.

Only those with a previously demonstrable functional illness required relatively high doses of medication. The remainder of them settled with low doses of medication, as were the findings from a larger cross-sectional, follow-up study that expanded on our present sample<sup>7</sup>.

As in all medicine, treatment is most efficacious when there is a specific remedy for the specific disease causing the clinical syndrome. Fear, anxiety, depression, elation, agitation, apathy, insomnia, and a host of other symptoms are common, and relief or palliation is as essential here as in patients with functional disorders. Therapeutic tools for symptomatic treatment of these organic disorders include supportive psychotherapy, environmental manipulation, pharmacotherapy and family counseling, all of which are useful or even essential.

However, in the absence of intact neural structures, symptomatic results are often less impressive than those achieved in patients with structurally normal brains, and symptomatic treatment obviously cannot reverse progressive disease processes<sup>11</sup>.

The most important point was that only those patients with reversible medical conditions had complete

resolution of their symptoms. As mentioned earlier, this was an expected finding and only 3 were completely asymptomatic after commencement of treatment, and upon discharge, and they were the ones who suffered from conditions where the cerebral insult was completely reversible. It may be hypothesized that because delirium is a syndrome and not a disease, variation should be expected, especially in older populations, where much heterogeneity occurs.

Nevertheless, Chandrasekaran, Jambunathan and Zainal (2005) found that elderly patients had no significant decreases in symptom resolution and mortality, nor an increasing need for continued treatment, as compared to those younger than 65 years<sup>7</sup>. Rockwood (1989) had shown that the mean duration of delirium in hospitalized older people varied greatly with a mean of 7 days and a range of 9 days.

The changes over time and the variability among subjects may, in fact, be a cause of some of the variation in previous studies of the rate, as well as the duration of delirium<sup>5</sup>. Those with Vascular dementias showed no improvement in their conditions and would thus, be more likely to develop depression at a later stage.

Although depression is well recognized as a cause of failure of rehabilitation and a barrier to recovery after stroke (Adams and Hurwitz, 1963) and that it occurs commonly in selected groups (Robinson and Price, 1982)(Robinson et al, 1984), it is frequently missed in practice (Fiebel et al, 1979). Losses and life events are known to be important causes of depression in the elderly, and post-stroke depression (PSD) may well be a reaction to loss of physical health and function (Murphy, 1982)<sup>15</sup>. Depression is a frequent sequelae of stroke and up to 50% of stroke patients may develop depression during the acute post-stroke period.

Although the treatment of elderly stroke patients who have multiple medical problems is sometimes difficult, it has been shown in controlled trials that most PSDs can be effectively treated. This makes depression one of the most readily treatable conditions which occurs in stroke patients, and its treatment may improve not only mood but also physical and intellectual recovery<sup>16</sup>.

Our group of patients also had very poor compliance to follow-up, a finding that could possibly be attributed to their carers' understanding of the illness. Most were in that age group that left them dependent on their carers. Additionally, they had medical conditions that were of sufficient severity that left them debilitated.

The results in our study conflict with the commonly held view that delirium in older persons is a transient illness.

They also suggest that there are important lessons for the practicing geriatrician or old-age psychiatrist. Clinicians should always be aware that there may be many contributory factors for OBS. In short, the key concepts in psychiatric care of the medically ill elderly are the recognition that diminished organ reserve alters response to illness, treatment, and social stressors, and keeping in mind that interacting causal patterns are the norm.

Thus, coordinated care is better care and non-drug treatments are preferable, but only when effective. Combining treatment modalities optimizes therapeutic gains and last but not least, not to forget that the provision of comfort, function and safety are the major goals of treatment<sup>4</sup>. The health status of the caregiver, his/her psychological and social aspects, including living arrangements, as well as family functioning and their response to illness make up the important determinants of the social support system.

Only by moving beyond global descriptions of persons, problems, and outcomes and considering the effects of biological, psychological and social characteristics on caregiver functioning can we advance our understanding of adaptive processes and continue to establish criteria for effective assessment, treatment and management decisions in intervention with this vulnerable and underserved population.

As this study was done for the reasons mentioned earlier, and to promote awareness (and possible interest) of medically-trained staff to be on the alert in considering OBS when encountering older patients, we had no difficulty hunting for criticism. The first would be that some patients with confusional states admitted to hospital may have been missed. This is a problem with many studies on delirium as many patients with mild, transient delirium may not always be detected.

Conversely, OBS may have been too casually used as a diagnosis at the time, although we have since moved on and accorded the appropriate, and internationally recognized, diagnostic coding systems. Therefore, misdiagnosis in cases where there were overlapping symptoms of delirium, dementia and depression may have occurred. Another limitation is the lack of documented information in the medical case notes as to the exact patterns of initial presentation of these episodes.

The third limitation was that the poor medical conditions of our patients disabled attempts to carry out assessment scales on cognitive functioning (e.g. MMSE), or on functionability, and judgment had to be made solely on clinical grounds. Finally, the last, and most important limitation, is the very small number of patients involved here thus, raising the possibility of encountering Null

hypotheses had statistical analyses been carried out. Also, pattern studies could not be conducted.

As unjustifiable as that may be, we wish to again express that our aim was merely to prove that some facts pertaining to obtaining information, and subsequently conducting a baseline study, are available in every hospital and attempts should be made to identify occurrences of certain illnesses, in varying age groups. This is much needed, especially in developing countries such as ours, where polymorphism in illnesses may differ from those frequently published in Western literature, and where monetary funding is frequently a concern.

### **Conclusions**

OBS in hospitalized older people is common and frequently diagnosed late. It has a varied presentation. The attending Medical Officers and Trainee Specialists need to consider this great heterogeneity when caring for patients, and when considering this syndrome. We possess more questions than answers at this moment but the fact that so many questions are being asked proves that brain diseases in the elderly, acute and especially chronic, are no longer the neglected backwaters of neuropsychiatry. The importance of these disorders, in both numerical and personal terms, is being appraised in an increasing manner and is reflected in the advances that have already been made. Their recognition as diseases, and not inevitable concomitants of aging, should be a harbinger of improved treatment, and perhaps even of prevention.

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## Naming Performance in Farsi-speaking aged people : Evidence from dementia of Alzheimer type , aphasic and healthy individuals

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### ABSTRACT

Naming is a mental process requiring representations of semantic, phonologic and morphosyntactic information of our mental lexicon. Many neurological conditions including neurodegenerative diseases such as Dementia of Alzheimer's type (DAT) and acute brain lesions leading to aphasia, bring about confrontational naming deficits which are considerably different by nature, and investigation of them may open a gate to better understanding of brain cognitive mechanisms in terms of language processing. The purpose of the present study was to compare visual confrontation naming performance of patients with DAT and aphasia and to evaluate the effects of semantic-phonologic priming on this performance in an Iranian aged sample.

**Method.** 20 patients with DAT compared with 17 patients with aphasia using a reference group of healthy elderly people. All the participants were examined using Farsi Aphasia Naming Test developed by Nilipour (2004). Data regarding the correct responses without any cues, with semantic priming and phonological priming were analyzed by T test using the software SPSS.

**Results.** The results showed that there is a significant difference in correct responses without any cues between 2 groups(  $p=0.000$ ) with aphasic patients being less able to name the pictures correctly. Significant differences also seen by using semantic ( $p=0.000$ ) and phonological priming( $p=0.000$ ). DAT group functioning improved by semantic priming, whereas the aphasic group did better with phonological priming.

**Conclusion.** It is concluded that naming difficulties in DAT patients are mostly arising from semantic memory deficits, whereas in aphasic patients the problem has a lexical-phonological origin. This finding may also have some implications in the early diagnosis of DAT patients.

**Key Words:** Picture naming test, Anomia, fluent aphasia, Alzheimer'disease, Aged people.

### Introduction

Confrontation naming performance is one of the important language functioning indices which is often assessed by picture naming tests. These neuropsychological tests typically include pictures of familiar objects such as tools, fruits, animals, etc. which should be named by the subject. Anomia is one of the very early symptoms observed in patients with dementia of Alzheimer type (DAT) and, also, a universal frequent symptom in aphasic patients. However the

nature of the two problems is considerably different. As Randolph et al. mentioned, " ... little work has been done... to determine how various demographic, linguistic, and disease status variables influence patterns of performance on these tests" (Randolph et al., 1999). Anomia in patients with DAT is supposed to have a semantic nature (Small et al., 2006; Garrad et al., 2005) resulting from deterioration of semantic memory. But some studies have stressed the role of post semantic deficits such as phonological lexicon activation in DAT

patients (Delazer, et al, 2003). A tendency is increasing among researchers to consider semantic anomia in DAT patients as a category - specific deficit (Albanese, 2007; Whatmough et al., 2003; Dion Fung et al., 2001) but this category specificity is by no means so prominent in aphasic patients, a fact which may be confirmed by the well-known verb-noun double dissociation in aphasic patients (Crepaldi et al., 2006; Luzzatti et al., 2002). Also some authors oppose the semantic nature of anomia in DAT patients and attribute it to visual object recognition deficits (Done and Hajilou, 2005; Simons et al., 2002; Hajilou and Done, 2007). The status for local acute lesions is much different. Aphasia arising from selective local impairments has been the subject of more detailed linguistically based tasks and also development of useful tools for testing psycholinguistic models (Wilshire et al., 2007). Margolin et al showed that impaired word finding reflected impaired processing of semantic information in the patients with DAT, whereas in the anomic patients impaired processing related to the lexical-phonological information (Margolin et al., 1990). Some studies have shown that phonological priming is the most effective cue in confrontational tasks for aphasic patients regardless of type and severity of their impairments (Howard & Lisle, 1984; Kay & Ellis, 1987). But Stimely et al. claimed that naming accuracy of aphasic patients was facilitated by both phonemic and semantic cues (Stimely & Noll, 1991). Also, Butterworth et al. discussed that the incidence of semantic comprehension errors was not related to aphasic diagnostic group but to the overall severity of aphasia (Butterworth et al., 1989). The present study was designed to compare visual confrontation naming performance in patients with DAT and aphasic patients and to assess the effects of semantic-phonologic priming on the Performance.

### **Material and Methods**

**Participants** - Two groups of patients participated in this study. The first group included 20 patients (8 female and 12 male) with dementia of Alzheimer type (DAT) who were the clients of Iranian Alzheimer Association-Tehran division and had been successively presented to the attending psychiatrist of the association and met the criteria of DSM-IV-TR for the diagnosis of Alzheimer's disease and also the MMSE score <27 at the interval of 2005-2006. The second group consisted of aphasic patients who were referred by speech therapy section of rehabilitation centers of Tehran and Mashhad at the interval of 2005-2006. They all suffered from an ischemic CVA damaging left perisylvian area which primarily included left temporoparietal region leaving them with a somewhat fluent aphasia, relatively spared oral expression skills and anomia. All the patients were literate (able to read and write) and in both bilinguals and monolinguals, Farsi was their primary language at the time of the disease.

A group of healthy elderly individuals were participated in the study as control group. They were able to read and write, in both bilinguals and monolinguals. Farsi was their primary language at the time of the study. None of them had a history of neurological, sensory or motor problems or any complaints of memory loss in the last few months.

After clearly explaining the aim and the process of the present study to the referred individuals, those who signed the consent letter entered the study. The letter was signed by the primary care-giver in the case that the patient was not able to give the informed consent due to her/his cognitive impairment. This study, also, gained the approval of the Research Ethical Committee of the University of Social Welfare and Rehabilitation.

**Tools** - A questionnaire designed to gather demographic and medical data was applied to all of the subjects. MMSE scores of patients with DAT and the normal group were obtained by using MMSE section of the Pocket Guide of Elderly Health Evaluation provided by Iranian Research Center on Aging (Iranian Research center on Aging, 2003). The aphasic patients were examined by Farsi Aphasia Test (Nilipour, 1994) to provide the differential diagnoses and the whole picture of the patient's language performance. The major tool of the study was Farsi Aphasia Naming Test (Nilipour, 2004) which is structurally much similar to Armstrong Naming Test (Armstrong, 1996). It is a picture naming test consisted of 50 pictures of familiar objects including ordinary tools, animals and fruits. Each picture is shown to the subject and (s)he is asked to name it orally. There are 4 columns in the answer sheet consisting of

- 1) responded without any priming
- 2) responded with semantic priming
- 3) responded with phonological priming and
- 4) the type of error.

Every noun is characterized by an underline below the first syllable used for phonological priming and a short sentence describing the name used for semantic priming. At first the participant is subjected to the picture without any help. If (s)he could not respond in 10 seconds, the semantic priming is introduced and again if (s)he could not respond, the phonological priming is given. Finally the rates and percents of the responses in each column are converted into a profile.

### **Results**

The data analysis showed that the first group, the patients with Alzheimer's disease, consisted of 20 patients including 8 females and 12 males with the mean age of 75.85 (age range= 61-82, SD=5.32) and the mean length of education of 7.10 (SD=4.33), 3 of them were bilingual

and 17 were monolingual and all were in the mild to moderate stages of the disease (mean MMSE=18.95, SD=6.18, MMSE range=12-27). The second group, aphasic patients, consisted of 17 patients included 6 females and 11 males with the mean age of 66.82( age range=60-78, SD=6.18) and the mean length of education of 11.52 (SD=6.49), 8 of them were bilingual and 9 were monolingual. The control group included 8 females and 12 males with the mean age of 67.25 (age range=60-82, SD=6.21) and the mean length of education of 9.30 (SD=4.31). Their mean MMSE score was 28.50 (MMSE range=25-30, SD=1.67) and 8 were bilingual and 12 were monolingual.

As figure 1, healthy elderly persons showed the highest and aphasic patients showed the lowest correct responses to 50 items of the test.

As Kolmogorov-Smirnov test proved the normality of data, T test was used for analysis. T test revealed that there is a significant difference in the mean scores of correct responses without any cue between DAT patients and aphasic patients ( $p = 0.000$ ).

T test revealed significant difference ( $p = 0.000$ ) between the mean score of DAT and aphasic patients regarding their reaction to semantic priming indicating a greater effect in DAT patients (Table 1). Also it is apparent from figure 2 that aphasic patients have shown a greater effect in phonological priming than the other group and T-test revealed that the difference is significant ( $p = 0.000$ ) (Table 1).

Figure 3 summarizes some of the results obtained from the naming test. The number of wrong responses in DAT patients were less than aphasics which was shown to be significant ( $p < 0.05$ ) by T test (Table 2). Also aphasic patients showed more "no response" than the other group and T test revealed significance of this difference ( $p = 0.000$ ) (Table 2). As indicated in figure 3 total correct responses (the sum of correct responses without any cue, with semantic priming and with phonological priming) is higher in DAT patients than aphasics which is proved to be significantly different ( $p = 0.000$ ) by T test (Table 2).

## **Discussion**

Naming is a mental process requiring representations of semantic, phonologic and morphosyntactic information of our mental lexicon. Many neurological conditions including neurodegenerative diseases such as Alzheimer's disease and acute brain lesions leading to aphasia bring about confrontational naming deficits in their victims which are much different by nature and would be a way to understand brain cognitive mechanisms in terms of language processing.

As Chiarelli mentioned, "Indeed, the peculiar pattern of linguistic and cognitive deficits in early Alzheimer's disease, whereby memory limitation and failure in semantics prevail over deficits on syntax, makes an interesting contrast with linguistic deficits in classic aphasia categories" (Chiarelli, 2006).

The results of the present study showed that there are many differences between the performance of 3 groups of healthy elderly individuals, patients with DAT and aphasic patients. In fact our normal aged group showed no deficit in the confrontational naming task which is consistent with the finding of Goulet, Ska, and Kahn who showed that picture-naming accuracy does not decline with advancing age (Goulet et al., 1994). There was a significant difference in correct responses without any cue between DAT and aphasic patients. DAT group had better performance in naming compared to the other. Also total naming performance including the total wrong responses, no responses and total correct responses showed a better status for DAT patients compared to the aphasic patients. These findings by no means indicate a good naming performance on the part of DAT patients but recognize and emphasize on anomia as a universal symptom of aphasia.

The main finding of this study is the recognition of differential stimulating power of semantic and phonological priming in word retrieval abilities of these 2 groups. DAT group benefited much by semantic cues whereas the aphasic patients enjoyed better from phonological primings. This study confirmed the findings of the previous researches that phonological cues are the best priming stimuli in aphasia, but the word retrieval problems of DAT patients are related to semantic memory deficits, and so they are more dependant on semantic cues for better naming performance. As Wingfield and colleagues outlined when an aphasic person is unable to name an object, giving the the patient the initial sounds of the target name will often trigger the correct response (Wingfield et al., 1990). Also, it has been suggested that aphasic anomia originates from a difficulty in accessing the formal lexical representation and not from a semantic problem (Le Dorze & Nespoulous, 1989).

It seems that phonological primes have a consistent facilitatory effect on aphasic picture naming (Wilshire & Saffran, 2005), but word retrieval problems of DAT patients are attributed to semantic memory deficits, so that it may be a valid determinant of predementia Alzheimer's disease (AD). It has been shown that impairments on semantically related tests are common in mild AD and may exist prior to the clinical diagnosis, hence assessment of semantic memory could be relevant in the evaluation of patients with suspected AD (Vogel et al., 2005). The research body investigating multilayer

processes involved in naming from concept to phonemes use different neurological conditions such as aphasia and progressive dementias to be able to see a slow motion, scanned picture of what happens in an extraordinary rapid mental stream called naming and has led so far to the development of lexical retrieval models with theoretical and clinical applications.

## Conclusions

OBS in hospitalized older people is common and frequently diagnosed late. It has a varied presentation. The attending Medical Officers and Trainee Specialists need to consider this great heterogeneity when caring for patients, and when considering this syndrome. We possess more questions than answers at this moment but the fact that so many questions are being asked proves that brain diseases in the elderly, acute and especially chronic, are no longer the neglected backwaters of neuropsychiatry. The importance of these disorders, in both numerical and personal terms, is being appraised in an increasing manner and is reflected in the advances that have already been made. Their recognition as diseases, and not inevitable concomitants of aging, should be a harbinger of improved treatment, and perhaps even of prevention.

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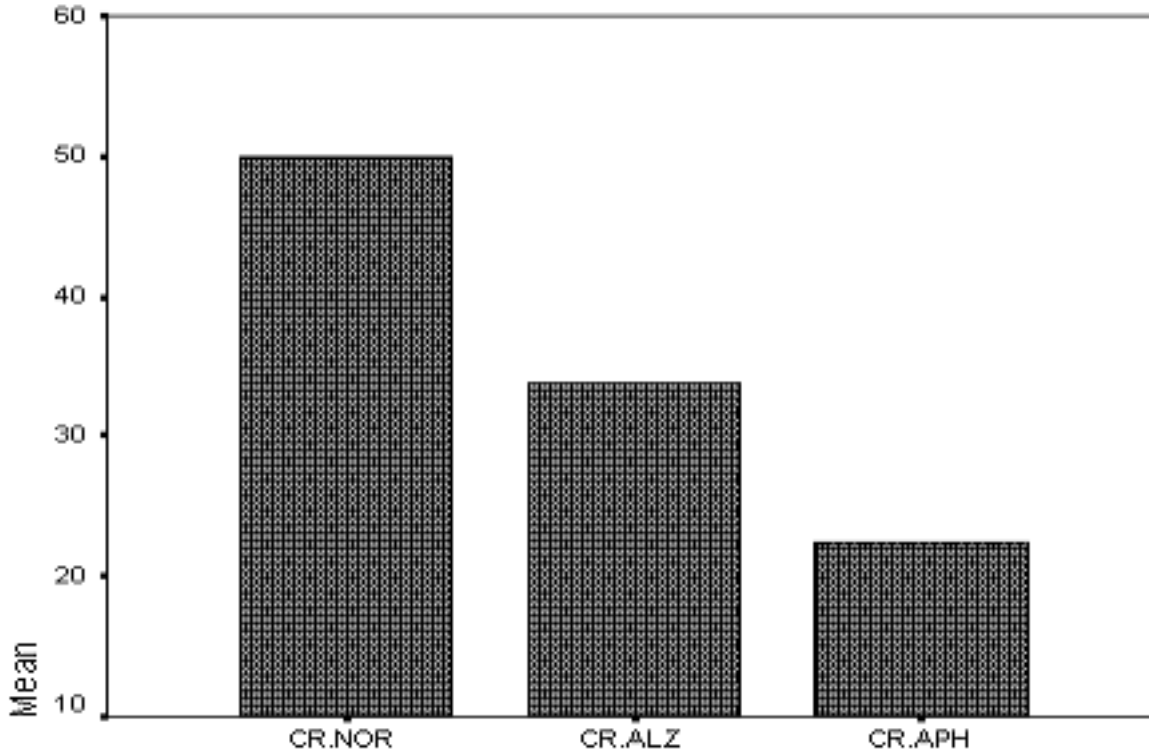
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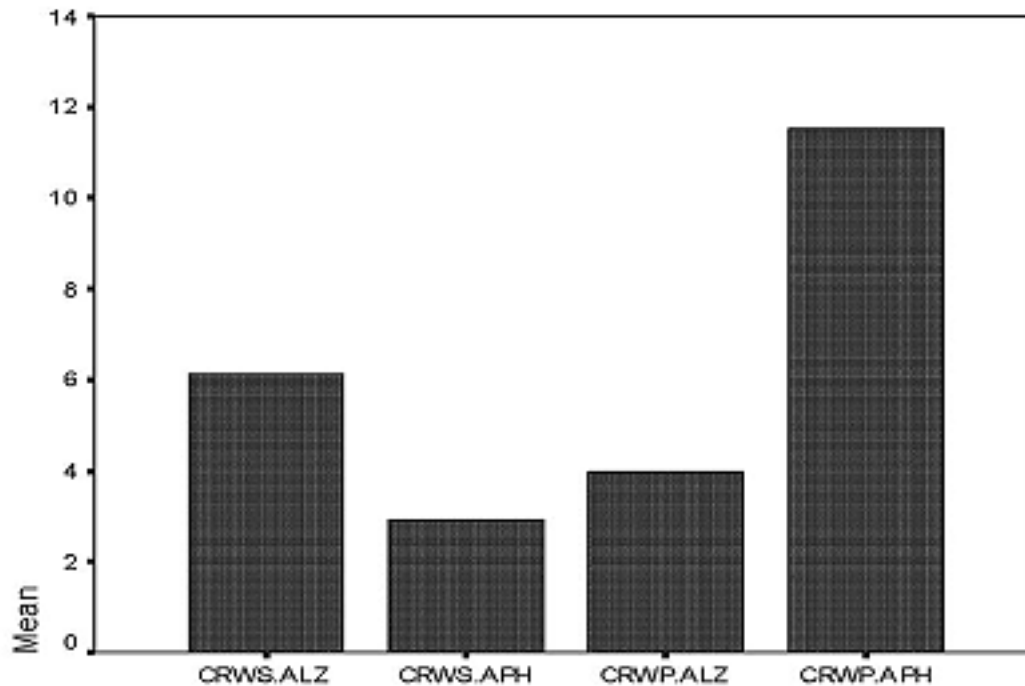
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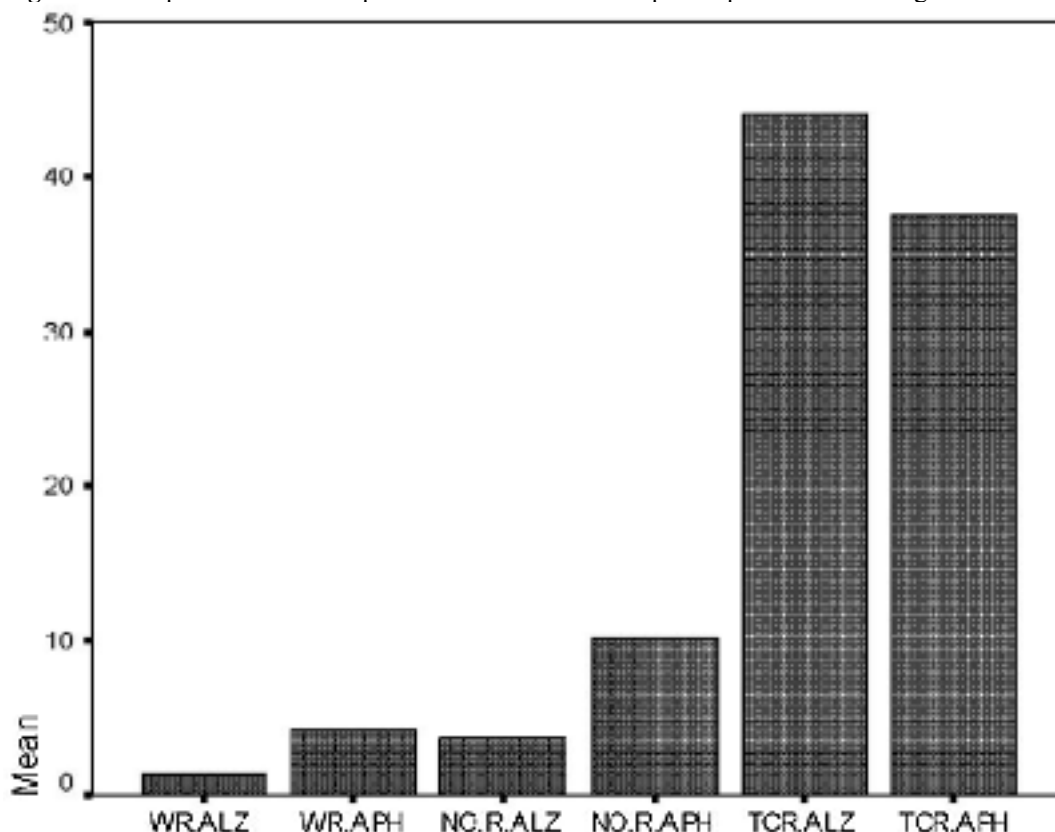
**Figure 1.** Frequency of correct responses without any cues in all three groups



**Figure 2.** The effects of different primings on eliciting correct responses in DAT and aphasic patients



**Figure 3.** Comparison of overall performance of DAT and aphasic patients in naming task



**Table 1** Comparison of correct responses without and with priming between DAT and aphasic patients

response	Test value = 0t	df	Sig (2-tailed)	Mean difference	95% CI lower	95% CI upper
CR.ALZ	17.780	19	0.000	34.1000	30.0857	38.1143
CR.APH	5.620	16	0.000	22.4706	13.9946	30.9465
CRWS.ALZ	5.667	19	0.000	6.0000	3.7839	8.2161
CRWS.APH	4.375	16	0.000	2.9412	1.5160	4.3664
CRWP.ALZ	4.518	19	0.000	3.7500	2.0129	5.4871
CRWP.APH	5.631	16	0.000	11.5294	7.1890	15.8698

CR.ALZ : Correct responses without any ques in DAT group

CR.APH : Correct responses without any aphasic group

CR. WS.ALZ: Correct responses with semantic priming inDAT group

CRWS.APH : Correct responses with semantic priming in aphasic group

CRWP.ALZ : Correct responses with phonological priming in DAT group

CRWP.APH : Correct responses with phonological priming in aphasic group

**Table 2** Comaprison of wrong, no response and total correct responses between DAT and aphasic patients

Response	test value = 0t	df	Sig (2-tailed)	mean difference	95% CI lower	95% CI Upper
WR.ALZ	2.463	19	0.024	1.10000	0.1652	2.0348
WR.APH	2.324	16	0.034	4.2353	0.3726	8.0980
NOR.ALZ	4.893	19	0.000	4.0000	2.2888	5.7112
NOR.APH	3.005	16	0.008	10.2353	2.0153	17.4553
TCR.ALZ	47.893	19	0.000	43.8500	41.9337	45.7663
TCR.APH	10/017	16	0.000	37.4118	29.4943	45.3293

WR.ALZ = wrong responses in DAT group

WR.APH = wrong responses in aphasic group

NOR.ALZ = normal responses in DAT group

NOR.APH = normal responses in aphasic group

TCR.ALZ = total correct responses in DAT group

TCR.APH = total correct responses in aphasic group

## Prevention of Cardiovascular Disease: A Pakistan Perspective

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### ABSTRACT

Coronary artery disease is a major and growing contributor to morbidity, mortality and disability in the South Asian countries including Pakistan. Cardiovascular disease profile in Pakistan shows the presence of emerging and advancing diseases such as coronary artery diseases (CAD) and cerebrovascular accidents (CVA) and of established and receding diseases such as hypertension and diabetes, which are also risk factors for CAD and CVA. Unfortunately in most countries the response to CVD prevention and control is still based on the infectious disease paradigm.

Consequently, the global and national capacity to respond to the CVD epidemic is woefully inadequate. While establishing a strategy for combating CVD there is need to offer multiple approaches on national, community and individual levels. Prevention programmes should be started based on cross-sectional surveys and case studies.

The majority of the people have modifiable risk factors for cardiovascular disease that are easily preventable. Prevention efforts are required early in life, using strategies for behavioral modification and health promotion. Additionally, political, social, cultural, and economic issues need to be considered in prevention and control of these diseases, to identify and address key limitations.

### Introduction

The great increase in rates of cardiovascular disease in developing countries will probably have grave implications for south Asia, which houses nearly a quarter of the world's population. Several factors might contribute to this effect, such as increased susceptibility of south Asian people to cardiovascular disease, unrecognized targets for preventive interventions, and restricted access to high-cost tertiary cardiovascular care for economically disadvantaged communities. Furthermore, prevention and control of cardiovascular

disease does not feature prominently in the health care agendas of south

Asian countries. To address these issues, therefore, a multifaceted approach is needed, which should include epidemiological studies to fill in the gaps in knowledge. Additionally, political, social, cultural, and economic issues need to be considered in prevention and control of these diseases, to identify and address key limitations and opportunities specific to the region. A set of recommendations outlining the approach is crucial<sup>1</sup>.

Stroke is a clinical syndrome characterized by rapidly developing symptoms and/or signs of focal, and at times global (for patients in coma), loss of cerebral functions, with symptoms lasting more than 24 hours or leading to death with no apparent cause other than that of vascular origin<sup>1</sup>. According to World Health Organization report 2002, total mortality due to stroke in Pakistan was 78,5122.

#### BURDEN OF THE CARDIOVASCULAR DISEASES

In 2000 more than half of the world's deaths were due to coronary artery disease (CAD) in the developing countries. Coronary artery disease is a major and growing contributor to morbidity, mortality and disability in the South Asian countries including Pakistan<sup>2</sup>. The total mortality due to cardiovascular disease in Pakistan during 2002 estimated by WHO were 154,3383.

#### RISK FACTORS OF CARDIOVASCULAR DISEASES

Among non-communicable diseases Cardiovascular Disease (CVD) is a leading cause of mortality and is responsible for one-third of all global deaths. Epidemiological data provides strong evidence that hypertension is one of the most important risk factors for the development of cardiovascular disease and kidney failure. Studies on migrant populations clearly demonstrate the enhanced susceptibility of South Asians to CVD compared to other ethnic groups.

High blood pressure (hypertension) is one of the most important preventable causes of premature death worldwide. In developing countries like Pakistan, the magnitude of the problem of uncontrolled hypertension is even greater. The National Health Survey of Pakistan reported that 21.5 per cent of the urban population over 15 years (one in every three persons the over age of 45) suffers from hypertension and only less than three per cent of the hypertensive had their blood pressure (BP) controlled to the conventional recommendations of under 140/90mmHg. The global estimate suggests that 8-18% of adults are hypertensive (defined as either taking antihypertensive drugs or having a systolic blood pressure equal to or more than 160mmHg and/or diastolic blood pressure equal to or more than 95mmHg) but by the same definition up to one half of the people 65 years and above have raised blood pressure. Hypertension is a well-established predisposing factor for cardiovascular diseases (CVD), such as left ventricular hypertrophy (LVH), left ventricular failure (LVF), atherosclerosis, ischemic heart disease (IHD) etc that have high mortality rates<sup>4</sup>.

Diabetes is a risk factor for coronary artery diseases and stroke, and is the most common cause of amputation

that is not the result of an accident. Worldwide only 10.15% of the cases are Type-1 diabetics and 85-90% are Type-2 diabetics. Type 1 diabetes causes nephropathy, proliferative retinopathy, renal failure and neuropathy. It usually follows a juvenile onset and the mortality, renal failure, and neuropathy chances increases in younger age i.e. 20 to 30 years. According to WHO report 2004 the prevalence of diabetes in Pakistan and India is 5-9.9%, 10-14.9% in Greece, 15% or above in Qatar and below 5% in China. Type 1 diabetes is now known to be an autoimmune disease. For unknown reasons, the patient's immune system destroys its own pancreatic insulin-producing beta cells. The hallmark of type-2 diabetes is insulin resistance, which may be mediated by one of a number of gene defects. At some point, the pancreatic beta cells are unable to compensate for the insulin resistance by increasing insulin secretion. Type 2 diabetes then appears<sup>5</sup>. A sample sketch of prevalence of diabetes in Pakistan is shown in table<sup>6</sup>.

Hyperlipidemia stands as the third most important risk factor of coronary artery diseases. Hyperlipidemia can cause blockage of coronary arteries and increase incidence of ischemic heart diseases. The recommended levels in the United States for total cholesterol in the adult aged population is less than 240mg/dl, for LDL cholesterol less than 160mg/dl, for HDL cholesterol less than 40mg/dl, and for triglycerides (fasting) is less than 200mg/dl<sup>7</sup>.

Smoking is also a major risk for CAD. A local study from Pakistan reported that based on weighted estimates, the overall prevalence of cigarette smoking was 14.2% (95% CI: 13.6-14.8) in individuals aged  $\geq 8$  years and 19.4% (95% CI: 19.08-19.72) among those aged  $\geq 15$  years. The highest prevalence was seen in the province of Sindh (16.1%) and the lowest in North Western Frontier Province (7.1%). Nearly a quarter of males (25.4%) were smokers while only 3.5% of females smoked ( $p < 0.001$ ). The smoking was slightly more prevalent in urban areas (15.2%) compared to rural areas (13.7%). This pattern was consistent in all provinces except the province of Sindh. The highest prevalence of cigarette smoking among males (48.6%) was seen in those aged 25-44 years. After this age, there was a decline in smoking among males in Punjab and North Western Frontier Province, whereas the other two provinces, Sindh and Balochistan, did not show any such trend<sup>8</sup>.

Obesity is a moderate risk factor in our patients. In Pakistan average Basic Mass Index (BMI) of people aged 15 and above estimated is 23-24.9kg/m<sup>2</sup> for females and 18-22.9 for males, In India 23.24 for female and 18-22.9 for males, In Brazil - 25 - 26.9. female and 23-24.9. males and in USA and Canada it is above 27 for both females and males<sup>9</sup>. In America, guidelines of the American

Heart Association/American Stroke Association have shown a new set of risk factors. It is aimed to have a policy that covers all or nearly all risk factors to combat CVD. According to their report, non-modifiable risk factors include age, sex, low birth weight, race/ethnicity, and genetic factors. Modifiable risk factors include hypertension, exposure to cigarette smoke, diabetes, atrial fibrillation and certain other cardiac conditions, dyslipidemia, carotid artery stenosis, sickle cell disease, postmenopausal hormone therapy, poor diet, physical inactivity, and obesity and body fat distribution. Less well-documented or potentially modifiable risk factors include the metabolic syndrome, alcohol abuse, drug abuse, oral contraceptive use, sleep-disordered breathing, migraine headache, hyperhomocysteinemia, elevated lipoprotein (a), elevated lipoprotein-associated phospholipase, hypercoagulability, inflammation, and infection<sup>10</sup>.

Summarizing we can say that Hypertension, diabetes, hypercholesterolemia and smoking are major modifiable risk factors of coronary artery disease. Obesity, coagulative disorders and history of use of oral contraceptives are minor risk factors for coronary artery disease.

### **Prevention Strategies for Cardiovascular Disease**

#### ***International scenario***

Unfortunately in most countries the response to CVD prevention and control is still based on the infectious disease paradigm. Consequently, the global and national capacity to respond to a CVD epidemic is woefully inadequate. The gap between the need for CVD prevention, control and capacity to meet, will go even wider unless urgent steps are taken.

As the CVD epidemic emerges in developing countries, it has an increasingly severe impact on men and women in their productive middle years, as well as on those who are older. The growing middle class of many developing countries is experiencing the first phase of the CVD epidemic, which for many is disrupting family stability and family income.

This has consequences for society as a whole. The cost of treatment can also have a serious impact on a country's health care expenditures and its economic development. For these reasons, development of effective approaches for CVD prevention and cost-effective management are urgent. Without effective prevention, the epidemic is predicted to expand, causing a profound impact on individuals and the country<sup>11</sup>. There is a parallel opportunity for sharing knowledge on CVD prevention. Developed countries experienced an epidemic of CVD in the middle of this century and have since achieved

a remarkable decline in cardiovascular mortality. Accomplishing this required major conceptual shifts in epidemiologic research (both observational and interventional), creation of a strong scientific database to guide policy and practice, and development of public information to discourage behaviors that predispose to CVD. As a similar epidemic of chronic diseases, especially CVD, emerges in developing countries, health professionals from developed countries are motivated to again share their experience of policies and approaches that have proven successful<sup>11</sup>. International research on cardiovascular disease (CVD) has a history of four decades or more and includes the CVD Unit of the World Health Organization (WHO), the International Society and Federation of Cardiology (ISFC) with its scientific councils and Section on Epidemiology and Prevention, and specific efforts initiated in several developed countries over the same period.

### **World Heart Federation Report on Pakistan**

To prevent cardiovascular disease, countries need adequate health systems. But adequate health systems do not just appear out of nowhere; they require a lot of inputs. One important prerequisite is adequate health information. In other words, countries first must know what is ailing their people. Are they too heavy? Are they too physically inactive? Do they smoke too much? Endowed with a base of knowledge, countries can then begin to construct health systems that are suitable to their needs.

Heartfile wants Pakistan to have adequate health systems, and not just ones able to prevent cardiovascular disease, which is the country's biggest killer. It wants Pakistan to confront the range of grave communicable and non-communicable diseases, from AIDS, cancer and diabetes to polio and tuberculosis. It is a collation of available health statistics in Pakistan. As such, it represents a first for her country. She hopes that it will serve as an evidence basis for health reform and as a template for periodic reports on health by Pakistan's government.

Gateway Paper 2 was launched on 26 June 2007 in Islamabad with the participation of Prime Minister Shaukat Aziz, Health Minister M. Nasir Khan and Acting World Health Organization Representative Rayana Bouhaka.

#### ***Paper shows need to improve***

The paper shows that there have been improvements in Pakistani health in many areas. For example, maternal and infant mortality have decreased over the last 60 years and immunization coverage has increased. On the other hand, it also shows that Pakistan lags, even in comparison with other low-income countries. For

example, it indicates that Pakistan has far to go toward the adequate testing for and treatment of tuberculosis, and that poliomyelitis continues to claim too many victims. In addition, it shows that Pakistan spends only 0.67% of its gross domestic product on health.

Of particular note, it shows that non-communicable diseases account for 54.9% of deaths, as opposed to infectious diseases, which account for 26.9% of deaths. Nearly a quarter of its adults have high blood pressure. Forty-one per cent of its men and 6.9% of its women smoke. Twenty-eight per cent of urban and 23% of rural Pakistanis are overweight. The unmistakable implication, is that non-communicable diseases, including heart disease and stroke, need more attention.

### **Substantial gains possible**

“Aiming for further improvements will only be possible by making strategic choices and investments and by restructuring the mode of social service delivery, of which health is a part

“Health systems are critical to the entire discussion,” she added. “Prevention of cardiovascular disease cannot be delivered unless we talk in terms of strengthening health systems.”

The former Chairwoman of the World Heart Federation’s Foundations Advisory Board said that she chose the term “Gateway” for her papers to reflect her contributions to national health policy setting from outside the governmental sector.

Her first Gateway paper was entitled “Health Systems in Pakistan - A Way Forward”. It was intended be a road map for health reforms in Pakistan. The third will focus on specific recommendations to reform the health sector<sup>13</sup>.

### **HEARTFILE an established leader**

Heart file is known for its innovative work to catalyze change in Pakistan’s health sector. The nongovernmental organization previously spearheaded Pakistan’s National Action Plan on Non-Communicable Diseases Prevention, Control and Health Promotion. Heartfile is a non-profit NGO health-sector think tank, recognized as a powerful and respected health policy voice within Pakistan and a unique model for replication in other developing countries.

The organization’s purpose is to catalyze change within the health sector in order to improve health and social outcomes.

The organizations scope of work within Pakistan involves:  
Strengthening the evidence base of health reforms?

Spearheading Pakistan’s Health Policy Forum?  
Reorienting health priorities in the wake of the epidemiological transition?  
Performing public health research?  
Publishing and disseminating original resource materials?

Scope of work internationally, includes:  
Developing innovations in the health sector and contributing to knowledge in the areas of health policy and public health planning for low resource settings.  
Forming an empirical basis for health reforms in the area of non-communicable diseases<sup>14</sup>.

### **WHO and International Clinical Epidemiology Network (INCLIN) efforts**

In addition to WHO and ISFC, national and international organizations engaged in CVD prevention and control include the International Clinical Epidemiology Network (INCLIN); United Nations Scientific, Educational and Cultural Organization (UNESCO); national and regional foundations; national academies of science and medicine in developed and in developing countries; medical schools and other academic centers of excellence; the World Bank; and donor agencies such as the Canadian International Development Centre and Swedish International Development Agency. Also, several networks have been established for the conduct of multinational randomized clinical trials in CVD, such as the International Studies of Infarct Survival (ISIS), Long Term Intervention with Pravastatin in Ischemic Disease (LIPID), and Global Utilization of Streptokinase and t-PA (tissue plasminogen activator) for Occluded Coronary Arteries (GUSTO), among others<sup>15</sup>.

### **The National Heart, Lung, and Blood Institute Report 2001**

During the past 30 to 40 years, tremendous advances have been made in preventing cardiovascular disease (CVD). Since 1960, mortality from CVD has decreased more than 50 percent in the United States. This remarkable decline is a result of population-wide efforts to prevent CVD and advances in treating patients with CVD. Over the past four decades, dietary and smoking habits, treatment of hypertension and dyslipidemia, outpatient therapy for CVD, and inpatient treatment of acute CVD events have improved substantially. To identify fruitful areas of research for continuing the United States’ history of success in preventing CVD, the National Heart, Lung, and Blood Institute (NHLBI) established in January 2001 the Task Force on Research in Prevention of Cardiovascular Disease. Its members represented specific areas of prevention research. This report documents the deliberations and recommendations of the Task Force<sup>16</sup>.

This document, therefore, reports key NCD risk factors. These include information on common lifestyle-related risks such as tobacco use, fruit and vegetable intake, Physical activity on the one hand, and biological risks inclusive of Diabetes, High Blood Pressure, Hypercholesterolemia and Obesity, on the other. In addition, data on Coronary Artery Disease, Stroke, Chronic Bronchitis, Cancer and Renal Diseases are also presented herewith.

These data suffer from several limitations. Firstly, incidence data is available for cancers only. Secondly, the nationally representative prevalence data for Diabetes, Renal Diseases and Chronic Bronchitis is more than 10 years old. Thirdly, there is the Issue of representativeness; prevalence data for Coronary Artery Disease has been reported from the results of a survey conducted in one city (Karachi) of the country, whereas data on prevalence of Stroke come from a survey carried out on a particular ethnic community within that city only<sup>17,18</sup>.

### **Lesson from The Developing Countries on Prevention of Cardiovascular Diseases**

The increasing burden of CVD has important economic implications. CVD occurs typically at a younger age in developing than developed countries with important consequences such as loss of revenue at household level and loss of productivity at macroeconomic level. From a health system perspective, huge resources are needed for providing health care to large numbers of chronic patients for decades and for sustaining increasingly sophisticated equipment and more skilled and harder-to-replace workforces. There are two approaches to reduce the burden of CVD. The population strategy, that includes community-based programs and health promoting policies, recognizes that several modifiable CVD risk factors are widely distributed in the population and that small change in CVD risk among large numbers of people can reduce largely the incidence of CVD in the population. The alternative is to target "high risk" people, i.e. risk factors are screened in the population and persons with high risk of CVD are treated. These alternative strategies, "population" and "high risk", can of course be considered as complementary<sup>19,20</sup>.

### **Prevention of Cardiovascular Disease: A Pakistani Perspective**

In Pakistan the National Action Plan for Non-Communicable Disease Prevention (NAP-NCD) incorporates prevention and control of cardiovascular diseases (CVD) as part of a comprehensive and integrated non-communicable Disease (NCD) prevention effort. In this programme revision of the current policy on diet and nutrition to expand its focus on under-nutrition; the

development of a physical activity policy; strategies to limit the production of, and access to, ghee as a medium for cooking, and agricultural and fiscal policies that increase the demand for, and make healthy food more accessible<sup>15</sup>.

Heartfile in Pakistan has started a programme that focuses on cardiovascular disease prevention and health promotion, includes several initiatives that encompass building policy, reorienting health services, and developing community interventions that utilize the print and electronic media and outreach at the grass-root level to incorporate social marketing approaches<sup>21</sup>.

The World Health Organization further reinforces the national approaches to combat cardiovascular diseases that framework convention on tobacco control (FCTC) which is ratified in the country. Tobacco control legislation is enacted and enforced. Multi-sartorial actions are required to reduce fat intake, reduce salt and promote fruit and vegetable consumption. Stakeholders must be included in the policy formulation and service planning. Capacity for health research is built within countries by encouraging research studies on CVD<sup>23</sup>.

### **Conclusion**

In short we can summarize that while establishing a strategy for combating CVD there is need to offer multiple approaches on national, community and individual levels. Prevention programmes should be started based on cross-sectional surveys and case studies. The majority of the people have modifiable risk factors for cardiovascular disease that are easily preventable. Prevention efforts are required early in life, using strategies for behavioral modification and health promotion. There is need for further actions, more collaboration, leadership, community involvement, UN assistance and government support to improve the quality of life of people living with heart diseases.

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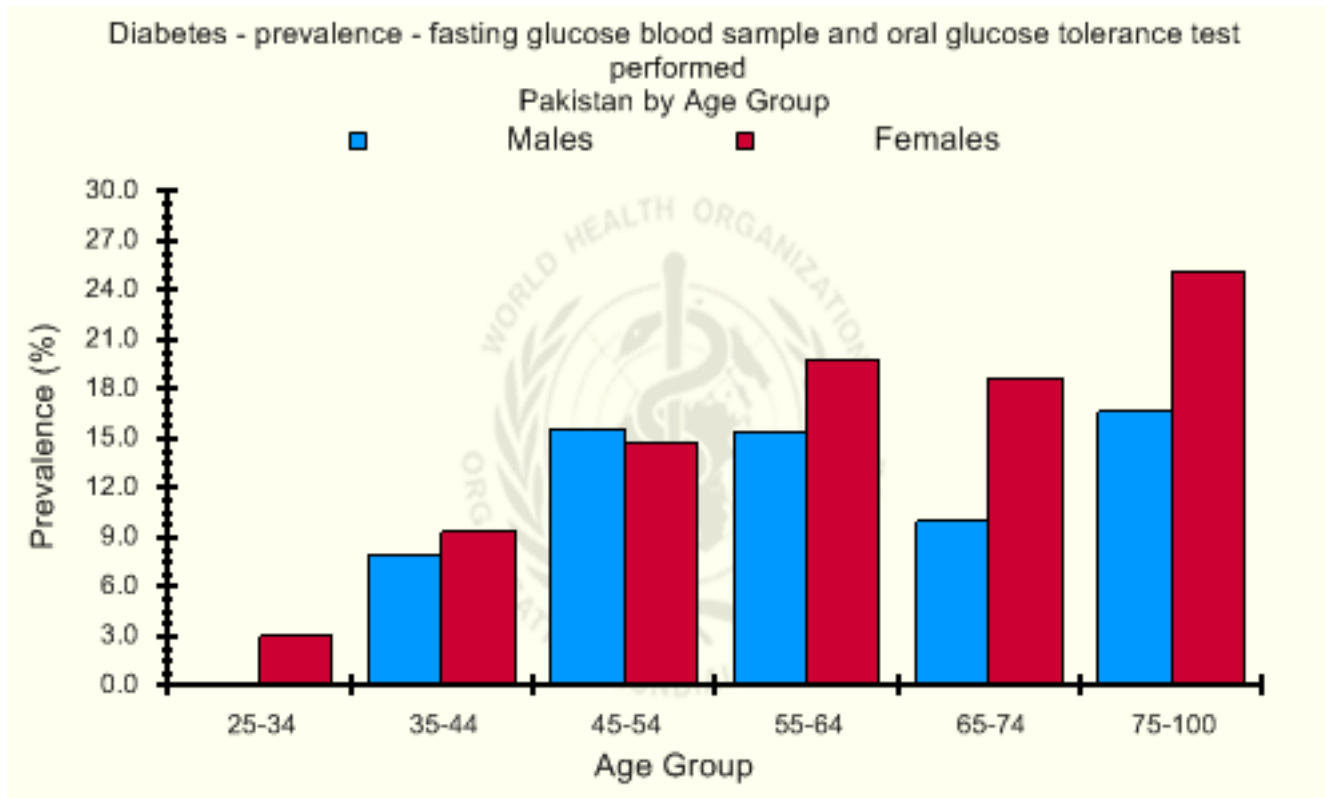
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**National/ Community level approaches towards cardiovascular disease prevention: comments of the physicians<sup>22</sup>**

National/Community level approaches towards cardiovascular disease prevention	Number of the re-spondents Total=60	Percentage of total
Tobacco control legislation	58	96.6%
National nutritional policy to reduce fat and salt intake & to promote fruits and vegetables intake.	36	60%
National physical activity policy for promotion of physical activities of the citizens.	42	70%
Check on food quality.	13	21.66%
Research activities promotion in medical institutes.	22	36.66%
Provision of drugs used for CVD treatment on affordable and accessible bases to citizen.	47	78.33V
CVD institutes (like NICVD) establishments in main cities.	26	43.33%
Conducting conferences and workshops to educate people about CVD.	18	30%
Walks should be arranged by government to increase awareness.	10	16.66%

Figure 1



Source: Shera AS et al. Pakistan National Diabetes Survey prevalence of glucose intolerance and associated factors in North West at Frontier Province (NWFP) of Pakistan, 1999 (<http://www.who.int/infobase> IRef: 100972)

## Potential Gain of Life Expectancies for Elimination of Leading Causes of Death in Bangladesh

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### ABSTRACT

This study outlines how to extend life expectation of the Matlab population as well as the diseases acting upon and causing fatalities in a population. It can facilitate the work of health policy makers and planners to take appropriate measures to reduce mortality levels or extend life expectancy of the population of the country. We have proposed measures of the effect of elimination of a specific disease on life expectancy in Bangladesh, that are easy to comprehend. As the characteristic "Average individual" in the population under study, one can congenitally express and compare health in terms of years of life expectancy. The communicable diseases, which include diarrhoeal and infectious diseases are the

### Introduction

At present the world is anxious to increase life expectancy. Already the developed countries have increased their life expectancy by controlling and eliminating the vulnerable diseases. But the underdeveloped and developing countries like Bangladesh still have low life expectancy. A hundred years ago, the average life expectancy in most parts of the world was 25 to 30 years. According to the WHO (1997-1999) and World Health Statistics Annual (see also the World Health Report 1998), life expectancy averages 64 years in the developing nations and is approaching 80 years in some industrial nations. Today in most developed countries it has stretched to over 70 years (Kabir 1987). The expectation of life at birth is 62 years for national cases of Bangladesh (Gordon 2003) and the expectation of life at birth is 61.7 years from national cases of Bangladesh (SASNET 2006). According to the "Health Department of United Nation" the cause of

major causes of low life expectancy in our population. If we are able to eliminate diarrhoeal diseases from our community, expectation of life will be sharply increased by about 1.43 years at birth. In order to compute the inherent peculiarities of deaths due to diarrhoeal and infectious diseases and their combined effect in presence of all other causes of death, single decrement life tables are constructed. The Health and Demographic Surveillance System (HDSS) of Matlab data on vital events by age, and cause specific death, published by ICDDR, B have been used for the purpose of this study.

**Key Words:** Life Expectancy, Effect of elimination, Infectious diseases, Life Table, Causes of Death, Mortality level.

death is social and (not only) biological (Gordon 1956). the majority of deaths of developing countries like Bangladesh are due to different types of disease.

A large number of mortality and morbidity cases are due to communicable diseases. Communicable diseases were the major health hazards in the 1980s. Some prime communicable diseases are diarrhoea, dysentery, tuberculosis, meningitis, hepatitis, chicken pox and rabies. Again cardiovascular disease (hypertension ischaemic heart disease and stroke) is very common cause of . AIDS is responsible for mortality in western countries but it is now also at an alarming rate in developing and underdeveloped countries. Respiratory disease is also a very big problem for the elderly and children too.

A joint statement (WHO and UNDP, 1986) emphasizes that acute respiratory infection, diarrhoeal diseases

and malnutrition are the principal causes of illness and death of children in developing countries. Disease in the late 1980s was most prevalent in rural areas; treatment was more readily available in the cities. A mid-1980s survey indicated that deaths due to diarrhoeal diseases, malnutrition, and pneumonia accounted for 16.3 percent, 13.1 percent, and 10.8 percent of all deaths, respectively. The percentages for other diseases were as follows: premature birth and birth injury (8.6 percent), cardiovascular accidents (4.5 percent), tetanus (4.4 percent), pulmonary tuberculosis (3.3 percent), measles (2.7 percent), and other causes (36.3 percent) (Hoque and Islam, 2002).

Most of the world is on target to reduce the impact of tuberculosis (TB) but efforts have yet to bear fruit in Africa where the disease goes hand in hand with AIDS (UN, 2006). In its annual report on the global impact of TB, the WHO said that the disease claimed 1.7 million lives in 2004 and that there were almost 9 million new infections. Tuberculosis bacteria infect more than three hundred thousand people and around 70,000 people die every year in the country. In another place one person is infected every two minutes and is dying every ten minutes of tuberculosis in Bangladesh. The WHO said that two of the worst affected countries, Philippines and Vietnam had already met the champion target. Bangladesh stands at fifth position among 22 high TB prevalence countries in the world while it ranks fourth among five leading TB-prone countries in South East Asia, according to World Health Organization. Dr Khurshid Alam Hyder, WHO consultant, presented a paper on the global and Bangladesh TB situation. He said TB bacteria have infected one-third of the world population. TB infects eight million people every year and claims two million lives yearly throughout the world.

Diarrhea is responsible for high morbidity and mortality in children and adults in developing countries (George et al. 1997). Diarrhoeal diseases still hold the second rank in the causes of global mortality and morbidity amongst infants in the developing world. Children aged less than 1 year, are the most vulnerable group (S. Dutta et al. 1997). Globally an estimated four million children and adults die annually of infectious diarrhea (Barua D. 1981). A high-risk diarrhea occurs when babies are on complementary feeding (Synder et al 1982). Sample Vital Registration System (SVRS) 1999-2002, BBS estimates 7.02 percent people of Bangladesh died of total deaths from cholera, diarrhea and dysentery which includes the diarrhoeal group in 2002. From Health and Demographic Surveillance System (HDSS) - Matlab data published by ICDDR, B we have to estimate 5.16% and 4.85% people died of total deaths from diarrhoeal diseases in 2000 and 2003 respectively.

Acute Respiratory Infection (ARI) is the most common cause of illness in children and a major cause of death in the world. Among children under 5 years of age 3 to 5 million deaths annually have been attributed to ARI of which 75% are from pneumonia. The World Health Organization (WHO) estimates that approximately three million children under five years died from ARI in 1993. ARI is also a significant cause of death at other ages particularly in the very old. Sample Vital Registration System (SVRS) 1999-2002, BBS estimates 13.92 percent people of Bangladesh died of total deaths from asthma and respiratory diseases in 2002. From Health and Demographic Surveillance System (HDSS) - Matlab data published by ICDDR, B we have to estimate 12.28% and 14.42% people died of total deaths from respiratory disease in 2000 and 2003 respectively.

Injuries of different natures and degrees are common health problems in everyday life. Especially tetanus, a fatal disease, is quite common in our country. Tetanus is the third cause of high infant mortality in Bangladesh (Khan, 1986). Sample Vital Registration System (SVRS) 1999-2002, BBS estimates 3.71 percent people of Bangladesh died of total deaths from tetanus in 2002.

Another disease viz. cardiovascular is the greatest killer in western countries. With the control of infectious and other diseases in our country, cardiovascular diseases are going to be the number one problem in the near future (Malik, 1979). Sample Vital Registration System (SVRS) 1999-2002, BBS estimates 10.51 percent people of Bangladesh died of total deaths from blood pressure, heart disease, and stroke which is included in cardiovascular disease, in 2002. From Health and Demographic Surveillance System (HDSS) - Matlab data published by ICDDR, B we have to estimate 12.15% and 19.46% people died of total deaths from Cardiovascular disease in 2000 and 2003 respectively.

For the diseases called causes of death mentioned above, like other undeveloped countries the expectation of life is still low in rural populations. If we are able to eliminate only one killer disease such as diarrhea, infectious or respiratory disease etc. from our country, then our life duration will be increased sharply. Dr. Farr's work was published in the Supplement to the Thirty-Fifth Annual Report of the Registrar General, 1875 and entitled.

Effect of the Extinction of any single disease on the duration of life'. Farr attempted the problem of eliminating a particular disease from the life table population, taking among other diseases, as example cancer and phthisis. Karn (1931) in his paper entitled 'An inquiry into various death rates and the comparative influence of certain Disease on the Duration of Life' constructed a life table for a population from which

cancer and tuberculosis were supposed to be eliminated as causes of death in order to estimate the effect of these diseases in shortening the duration of life. We have come to know from Karn's (1993) paper that before the Farr's work the French Mathematician Daniel Bernoulli and D'Alembert found the increase of mean life time which would result from the extinction of small-pox. They discussed the expected consequences on mortality model if small pox were to be eliminated as a cause of death.

It is well known that the development indicator is the disease free life. Elimination of a cause of death has real natural meanings. Removal of the sources of infection or prevention of fetal development of the disease is conducted by vaccination. At present diarrhoeal and infectious diseases associated with aging have now become the major causes of death in Bangladesh. It is not that difficult to eliminate diarrhoeal and most of the infectious diseases. Constructing multiple decrement life tables with associated single decrement life tables provides scope to explore probability distribution or pattern of deaths by age due to different causes acting simultaneously in the population. Hoque (1993) carried out a such study using multiple decrement technique. Abedin and Islam (1993) have analyzed age and cause specific mortality data by constructing multiple and single decrement life tables in order to see the probability distribution by age, for water related diseases which seem to be one of the major causes of death of Matlab population, Bangladesh. Hoque and Abedin (1996) estimated the cause specific life expectancy of the elderly population of Matlab. Very recently Hoque (2008) and Hoque and Islam (2002) estimated the effect of elimination of a specific disease on life expectancy in Bangladesh and construct a single decrement life table.

In this paper, an attempt has been made to study the effect of elimination of diarrhoeal and infectious diseases separately and combinedly, causes of death on probabilities and life expectancies of the rural (Matlab) population of Bangladesh for the years 2000 and 2003.

### Materials and Methods

For the purpose of this study, age and cause specific mortality data are required. The Health and Demographic Surveillance System (HDSS) of Matlab data on vital events by age and cause specific death, published by ICDDR, B, appears to be the source available for this purpose. Since 1966 the Matlab area has had a continuous mortality registration system. The present study uses 2000 and 2003 mortality data by age and cause of death in the scientific report no. 89 and 92 respectively.

The age specific mortality rate ( ${}_nM_x$ ) is computed by dividing the observed death ( ${}_nD_x$ ) by the mid year

population ( ${}_nP_x$ ) i.e.  ${}_nM_x = {}_nD_x / {}_nP_x$  and converted into probability (conditional) death in  $(x, x + n)$  denoted by  $nqx$  given alive age  $x$  on the assumption that deaths are uniformly distributed over the age interval  $(x, x + n)$ .

The conversion formula is  ${}_nq_x = 2 \cdot {}_nM_x / (2 + {}_nM_x)$

The above formula is used to compute conditional probabilities of death from all causes excluding diarrhoeal diseases, excluding infectious diseases and excluding diarrhoeal & infectious diseases simultaneously. In order to compute the peculiarities of death due to diarrhoeal diseases as well as infectious diseases and diarrhoeal and infectious diseases combinedly in presence of all other causes of death, a single decrement life table is constructed. For causes excluding diarrhoeal diseases, excluding infectious diseases and excluding diarrhoeal & infectious diseases combined, are labeled as (-1), (-2) and (-3) respectively. The conditional probability of dying in age interval  $(x, x + n)$  for all causes, excluding diarrhoeal diseases, excluding infectious diseases and excluding diarrhoeal & infectious diseases combinedly are denoted by  ${}_nq_x$ ,  ${}_nq(-1)_x$ ,  ${}_nq(-2)_x$ , and  ${}_nq(-3)_x$  respectively be computed the conditional probabilities given in the multiple decrement life tables.

Once  $nqx$  and  ${}_nq_{(-i)x}$  ( $i= 1, 2 \& 3$ ) are obtained the survival functions  $l_x$  are taken of  $l_0 = 100000$  and using the relationship

$$l_{x+n} = l_x (1 - {}_nq_x) \text{ and}$$

$$l_{(-i,x+n)} = l_{(-i)x} (1 - {}_nq_{(-i)x}); i = 1, 2 \& 3.$$

Person - years lived between ages  $x$  to  $x + n$  is denoted by  ${}_nL_x$  which can be defined by  ${}_nL_x = 0.3l_x + 0.7l_{x+n}$ ; for  $x = 0$  and  $n = 1$ ,  ${}_nL_x = 0.4l_x + 0.6l_{x+n}$ ; for  $x = 2$  and  $n = 4$ ,  ${}_nL_x = n/2(l_x + l_{x+n})$ ; for  $x = 5, 10, 15, \dots, 80$  and  $n = 5$  and  ${}_nL_x = l_x / M_x$ ; for  $x = 85+$  and  $n$  is opened.

Total number of person - years lived above age  $x$  is denoted by  $T_x$  which can be defined by

$$T_x = \sum_{y=x}^{\infty} L_y; \text{ where } x \text{ is the lower limit of age group.}$$

The expectation of life denoted by  $e_x^0$ , which can be defined by

$$e_x^0 = T_x / l_x; \text{ where } x \text{ is the lower limit of age interval.}$$

The life expectancy in age interval  $(x, x + n)$  for all causes, excluding diarrhoeal diseases, excluding infectious diseases and excluding diarrhoeal & infectious diseases combined are denoted by  $e_x^0$ ,  $e_{(-1)x}^0$ ,  $e_{(-2)x}^0$  and  $e_{(-3)x}^0$  respectively given in the multiple decrement life tables.

Again the additional expectation of life denoted by  $a_{(ix)}$

is computed from the difference between all causes and excluding a specific cause that is

$$a_{(ix)} = e^0 - e^0_{(-ix)}; i = 1, 2 \text{ \& } 3.$$

Having obtained the life expectancies due to these causes, they are computed in the usual manner (Johnson, 1980).

### Results and Discussion

We are interested to examine the death pattern and expectation of life due to all causes except diarrhoeal diseases, all causes except infectious diseases and also due to all causes except diarrhoeal and infectious diseases combined. For the purpose we have constructed single decrement life tables eliminating a specific disease one after another from all acting diseases.

Table 1 gives the probabilities of dying for all causes with excluding a specific disease separately and combinedly of Matlab population for the years 2000 and 2003. From this table, we have found that the risks of death by all causes are relatively higher than by all causes except diarrhoeal disease as well as except infectious disease. The same results followed by eliminating diarrhoeal and infectious diseases combinedly over all ages for both the years 2000 and 2003 of Matlab population.

It has also been found that the risks of death due to different causes markedly declines for the year 2003 than that of 2000 for all age groups. Naturally the infant probability of dying is greater than that of older age probabilities of dying for both the calendar years 2000 and 2003. It is found from this table that the risks of death of middle year age are relatively low compared to that of early and elderly age due to all causes for both the study years exhibiting the typical mortality pattern. In estimating the expectation of life and the additional expectation of life resulting from elimination of a specific cause of death by normal method, are set out in Table 2.

From Table 2 and Figures 1-3, we have found that for the elimination of diarrhoeal diseases the ordinary expectation of life at birth is 65.29 years which is increased 0.84 years than for all causes in 2000, by the elimination of infectious diseases the expectation of life is 65.30 years which is increased by 0.85 years than for all causes and by the elimination of diarrhoeal and infectious diseases combinedly the expectation of life at birth is 66.18 which is increased by 1.73 years than for all causes in 2000.

These differences became larger in the former ages than the latter ages. It also indicates that the differences in expectation of life ranging from 0.84 years at birth to 0.74 years in the case of diarrhoeal diseases, from 0.85 years at birth to 0.05 years in case of infectious diseases and 1.73 years at birth to 0.81 years in case of diarrhoeal and

infectious diseases combinedly in 2000.

Again we have found that for the elimination of diarrhoeal diseases the ordinary expectation of life at birth is 66.34 years which is increased by 0.67 years than for all causes in 2003, by the elimination of infectious diseases, the expectation of life is 66.37 years which is increased 0.70 years than for all causes and by the elimination of diarrhoeal and infectious diseases combinedly the expectation of life at birth is 67.10 which is increased 1.43 years than for all causes in 2003. It has been noticed that the expectation of life at birth increased 2.86 years in the Matlab population if we eliminate the diarrhoeal & infectious diseases combined (Hoque and Islam 2002). Also it has been noticed that the expectation of life at birth increased 5.50 years from national cases if we eliminate the diarrhoeal diseases only (BBS, 1996).

It also indicates that the differences in expectation of life ranging from 0.67 years at birth to 0.57 years in case of diarrhoeal diseases, from 0.70 years at birth to 0.04 years in case of infectious diseases and 1.43 years at birth to 0.63 years in case of diarrhoeal and infectious diseases combinedly in 2003.

Table 2 and Figure 3 also show that the expectation of life at birth is increased by 1.22 years in the case of all causes of death, 1.05 years in case of diarrhoeal diseases elimination, 1.07 years in the case of infectious diseases elimination and 0.92 years in the case of diarrhoeal & infectious diseases elimination from the calendar year 2000 to 2003 of the Matlab population.

From Figures 1, 2 and 3 we have found that the expectation of life by elimination of both diarrhoeal and infectious diseases is always greater than the expectation of life for all causes and also by elimination of diarrhoeal and infectious diseases separately the expectation of life is greater than the expectation of life for all causes in 2000 and 2003.

Again from Figure 3, obviously we say that the expectation of life at birth by elimination of diarrhoeal and infectious diseases separately and combinedly in 2003 is greater than from 2000.

Again from Figures 1-3 obviously we show that the additional expectation of life by elimination of both diarrhoeal and infectious diseases is greater than the additional expectation of life by elimination of diarrhoeal and infectious diseases separately in 2000 and 2003. And we have to show that the additional expectation of life at former ages is greater than the latter ages by elimination of diarrhoeal and infectious diseases separately and combinedly in 2000 and 2003. We have also found that the additional expectation of life in 2000 is greater than

the additional expectation of life in 2003 in the case of elimination of diarrhoeal and infectious diseases separately and combined.

To compare the cause specific and year specific life expectancy at birth and % of death we estimate Table 3.

From Table 3, we have to show that the expectation of life at birth is increased in 2003 than 2000 for all causes. It has been found that 5.16% of the total deaths occurred due to diarrhoeal diseases for the year 2000 whereas, 4.85% for the year 2003 are due to the same diseases. It is obviously noticed that the death due to diarrhoeal diseases sharply declined since last decade in Matlab population. For this reason the expectation of life at birth excluding diarrhoeal diseases increased by 1.05 years from 2000 to 2003. Similar trends have been found for excluding infectious diseases and diarrhoeal & infectious diseases combined.

From Figure 4, we obviously see that the expectation of life at birth for different causes is increased in 2003 than 2000, therefore we have to say that the expectation of life is going to be increased in the Matlab population. Again from Figure 5, we have found that the % of deaths due to different causes is decreased in 2003 than 2000. In this case the expectation of life at birth is increased from 2000 to 2003.

### **Conclusions and Policy Implications**

The diseases acting simultaneously in Matlab population and causing a fatality situation prevailing in Matlab, may have important policy implications. The findings of our study may help planner and policy makers to take appropriate measures to reduce mortality levels in the study area, Matlab, as well as of the country, which faces a serious problem of health condition vis-à-vis socioeconomic underdevelopment and discouragement of high fertility of our population. Most mortality due to diarrhoeal diseases in almost all ages is reflected from the analysis. Diarrhoeal and infectious diseases seem to be the major causes of low life expectancy in Matlab as well as in our country. Therefore if we are able to eliminate or control diarrhoeal and infectious diseases from our community expectation of life will increase about 1.43 years at birth. It is apprehended that the problems are associated with controlling the diseases of pneumonia, diarrhea, dysentery, tetanus, small chicken pox and malnutrition in Matlab. Special attention should be given towards children with emphasis early of approximate dehydration therapy to minimize their mortality rates.

The strategy of universal health care by the year 2000 has become accepted, and government efforts toward infrastructure development included the widespread

construction of rural hospitals, dispensaries, and clinics for outpatient care. Presumably, use of safe water has substantially reduced mortality and morbidity due to water born diseases. If the situation is improved, further control over this type of disease can be achieved. Infant and children less than five years of age died with greater intensity due to diarrhoeal diseases as well as some remarkable deaths due to infectious diseases. Though the study is meant for a subpopulation and thus not amenable for generalization, still the findings may prove of value to policy makers, planners and researchers in exploring the possibilities of improving health and hygienic conditions and controlling the most vulnerable diseases operating not only in Matlab but also in the whole of Bangladesh.

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**Table 1** Probabilities of dying for excluding a specific cause for the year 2000 and 2003 of Matlab population

Age Group	2000				2003			
	$nq_x$	$nq_{(-1x)}$	$nq_{(-2x)}$	$nq_{(-3x)}$	$nq_x$	$nq_{(-1x)}$	$nq_{(-2x)}$	$nq_{(-3x)}$
0-<1	0.05475	0.05224	0.05367	0.05116	0.04486	0.04248	0.04418	0.04129
1-4	0.02051	0.01819	0.01954	0.01722	0.01531	0.01440	0.01476	0.01385
5-9	0.00657	0.00638	0.00638	0.00619	0.00398	0.00398	0.00398	0.00398
10-14	0.00331	0.00296	0.00279	0.00244	0.00377	0.00377	0.00340	0.00340
15-19	0.00518	0.00518	0.00497	0.00497	0.00543	0.00543	0.00481	0.00481
20-24	0.00676	0.00676	0.00622	0.00622	0.00542	0.00542	0.00515	0.00515
25-29	0.00801	0.00801	0.00735	0.00735	0.00521	0.00521	0.00488	0.00488
30-34	0.00405	0.00405	0.00371	0.00371	0.00544	0.00510	0.00476	0.00442
35-39	0.00936	0.00902	0.00936	0.00902	0.00957	0.00923	0.00821	0.00787
40-44	0.01235	0.01235	0.01112	0.01112	0.01378	0.01309	0.01207	0.01138
45-49	0.02074	0.02074	0.01731	0.01731	0.01752	0.01752	0.01564	0.01564
50-54	0.02722	0.02722	0.02460	0.02460	0.02698	0.02574	0.02450	0.02326
55-59	0.04430	0.04365	0.03911	0.03846	0.05350	0.05090	0.04959	0.04697
60-64	0.10002	0.09402	0.09327	0.08722	0.08243	0.07896	0.07826	0.07477
65-69	0.16487	0.15873	0.15785	0.15166	0.16312	0.15907	0.15744	0.15335
70-74	0.24334	0.23567	0.23439	0.22664	0.19709	0.19009	0.19009	0.18305
75-79	0.30488	0.28680	0.28680	0.26833	0.35808	0.34907	0.34179	0.33259
80-84	0.45131	0.42892	0.44391	0.42131	0.54160	0.51241	0.53873	0.50943
85+	1.0000	1.0000	1.0000	1.0000	1.00000	1.0000	1.0000	1.0000

**Table 3** Expectation of life at birth and percent of death due to specific causes of Matlab population for 2000 and 2003

Expectation of life at birth			% Distribution of death		
Cause of death	2000	2003	Diseases	2000	2003
For all causes	64.45	65.67			
Excluded diarrhoeal diseases	65.29	66.34	Diarrhoeal	5.16%	4.85%
Excluded infectious diseases	65.30	66.37	Infectious	5.10%	4.01%
Excluded diarrhoeal & infectious diseases	66.18	67.10	Diarrhoeal & Infectious	10.26%	8.86%

**Table 2** Expectation of life due to all causes and excluding a specific cause for the year 2000 2003 of Matlab population

2000							
Age Group	$e_x^0$	$e_{(-1x)}^0$	$e_{(-2x)}^0$	$e_{(-3x)}^0$	$a_{1x}$	$a_{2x}$	$a_{3x}$
0-<1	64.45	65.29	65.30	66.18	0.84	0.85	1.73
1-4	67.17	67.88	67.98	68.74	0.71	0.81	1.57
5-9	67.56	68.13	68.33	68.93	0.57	0.77	1.37
10-14	62.99	63.55	63.75	64.35	0.56	0.76	1.36
15-19	58.20	58.73	58.92	59.50	0.53	0.72	1.30
20-24	53.49	54.02	54.21	54.78	0.53	0.72	1.29
25-29	48.83	49.37	49.53	50.11	0.54	0.70	1.28
30-34	44.21	44.75	44.88	45.46	0.54	0.67	1.25
35-39	39.38	39.92	40.04	40.62	0.54	0.66	1.24
40-44	34.72	35.26	35.39	35.97	0.54	0.67	1.25
45-49	30.13	30.67	30.76	31.35	0.54	0.63	1.22
50-54	25.71	26.27	26.26	26.85	0.56	0.55	1.14
55-59	21.36	21.93	21.86	22.47	0.57	0.50	1.11
60-64	17.24	17.82	17.65	18.27	0.58	0.41	1.03
65-69	13.87	14.41	14.20	14.77	0.54	0.33	0.90
70-74	11.12	11.66	11.40	11.97	0.54	0.28	0.85
75-79	8.89	9.48	9.12	9.74	0.59	0.23	0.85
80-84	6.70	7.29	6.78	7.40	0.59	0.08	0.70
85+	5.15	5.89	5.20	5.96	0.74	0.05	0.81
2003							
Age Group	$e_x^0$	$e_{(-1x)}^0$	$e_{(-2x)}^0$	$e_{(-3x)}^0$	$a_{1x}$	$a_{2x}$	$a_{3x}$
<1	65.67	66.34	66.37	67.10	0.67	0.70	1.43
1-4	67.74	68.27	68.42	68.98	0.53	0.68	1.24
5-9	67.79	68.26	68.44	68.94	0.47	0.65	1.15
10-14	63.05	63.53	63.70	64.21	0.48	0.65	1.16
15-19	58.28	58.76	58.91	59.42	0.48	0.63	1.14
20-24	53.58	54.07	54.18	54.69	0.49	0.60	1.11
25-29	48.86	49.35	49.45	49.96	0.49	0.59	1.10
30-34	44.10	44.59	44.68	45.20	0.49	0.58	1.10
35-39	39.33	39.81	39.88	40.39	0.48	0.55	1.06
40-44	34.69	35.15	35.19	35.69	0.46	0.50	1.00
45-49	30.14	30.59	30.59	31.07	0.45	0.45	0.93
50-54	25.63	26.09	26.04	26.52	0.46	0.41	0.89
55-59	21.27	21.71	21.63	22.09	0.44	0.36	0.82
60-64	17.33	17.74	17.63	18.06	0.41	0.30	0.73
65-69	13.66	14.05	13.91	14.32	0.39	0.25	0.66
70-74	10.84	11.23	11.05	11.46	0.39	0.21	0.62
75-79	7.89	8.28	8.05	8.47	0.39	0.16	0.58
80-84	5.89	6.39	5.93	6.44	0.50	0.04	0.55
85+	4.90	5.47	4.94	5.53	0.57	0.04	0.63

Figure 1 Additional Expectation of Life at birth of Matlab Population in 2000

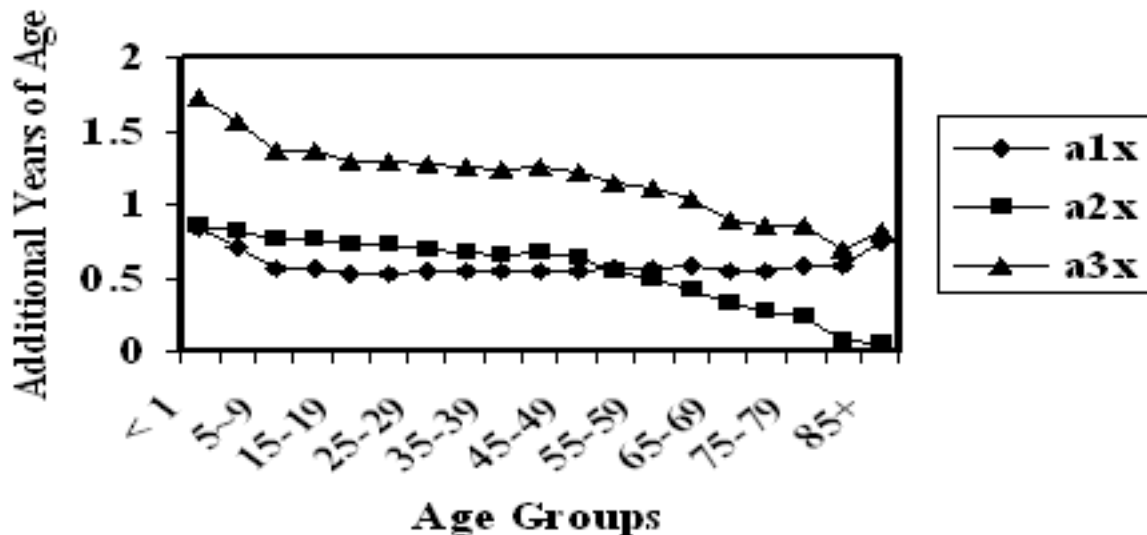


Figure 2 Additional Expectation of Life at birth of Matlab Population in 2003

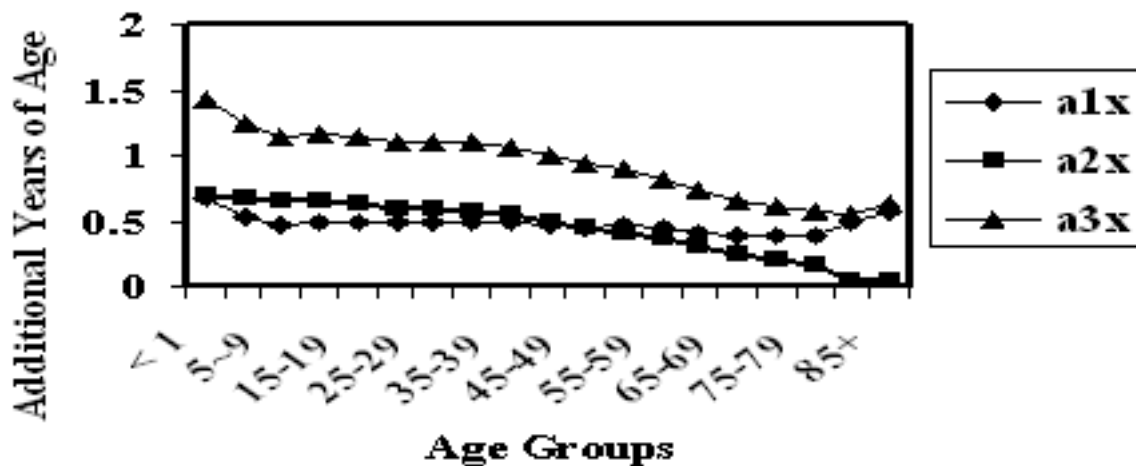


Figure 3 Comparative Pattern of the Additional Expectation of life at Birth between 2000 and 2003 of Matlab Population

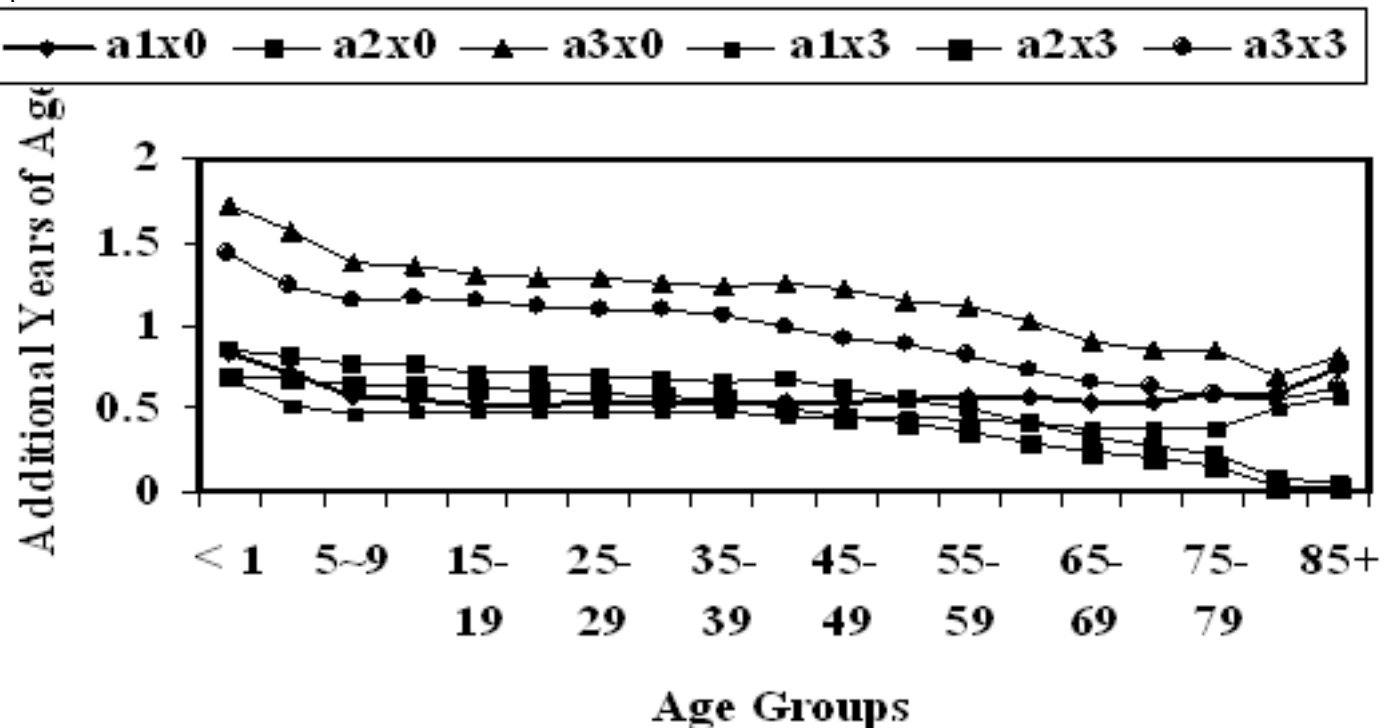


Figure 4 Comparative Pattern of the Expectation of Life at Birth for the Years 2000 and 2003 of Matlab Population

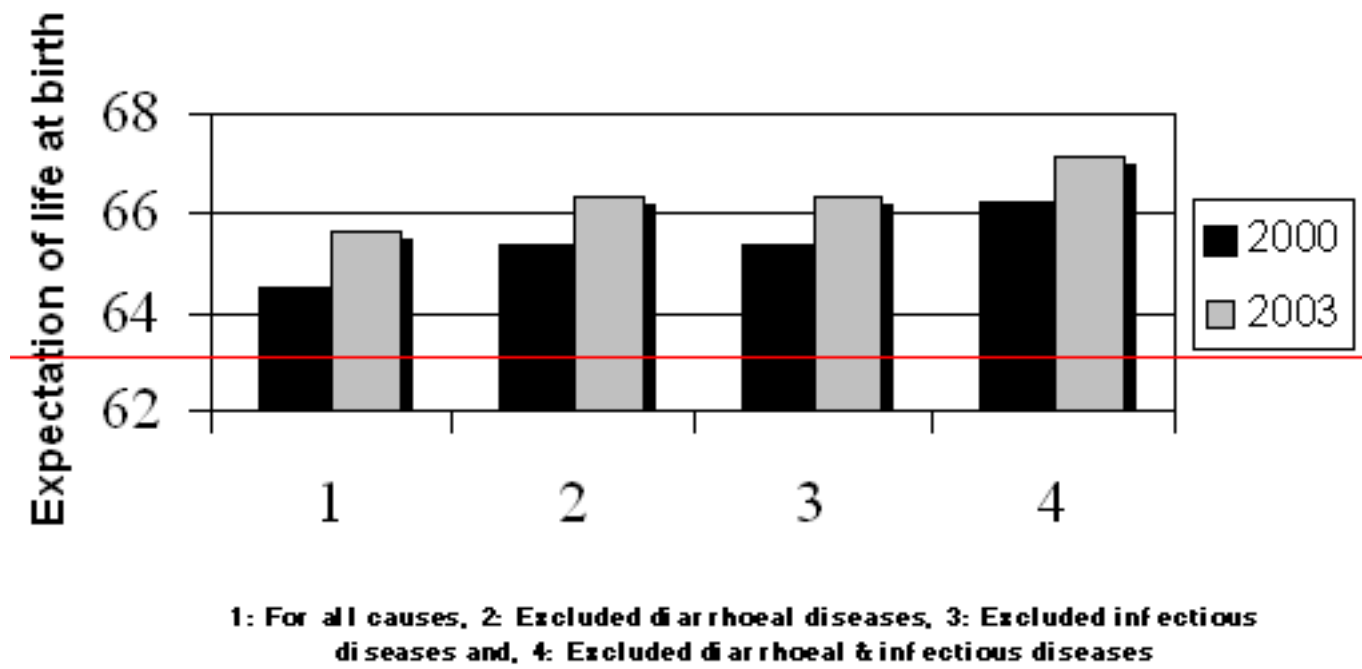
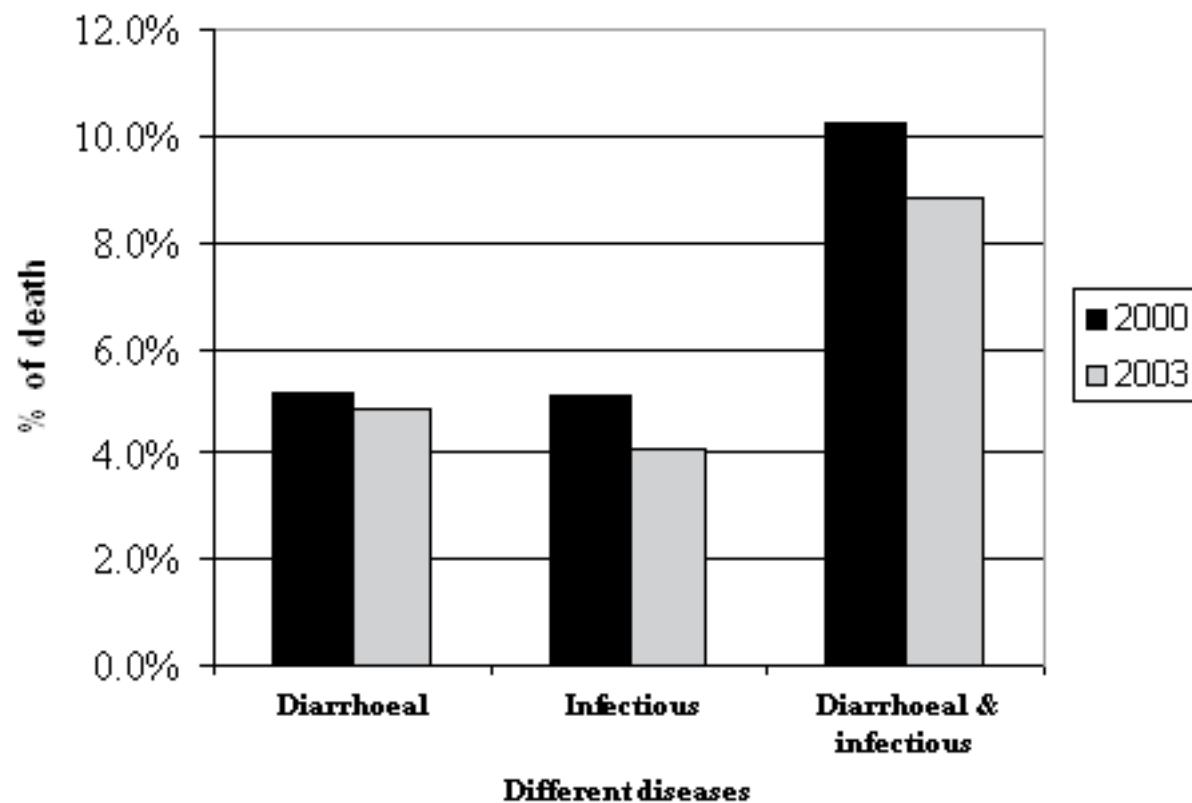


Figure 5 Comparative pattern of the Percentage of Deaths for the Years 2000 and 2003 of Matlab Population



## Salient features of the Aged Population of Bangladesh

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### ABSTRACT

Population aging is a universal phenomenon in the new millennium and almost all countries, developed or developing, are faced with this phenomenon. The growing number of elderly in countries like Bangladesh is causing social, economic and financial strain on its overall development activities. With this in mind the present study was undertaken to throw some light on the situation of the older person of age 60 and more, using census data. This study focuses on the marital status, household living status and religion of the elderly population, their educational and working status and also their health condition. In census data we have seen that most of the older persons in Bangladesh are Muslim (87.7%), most of

them are married and live in dwelling type of household. The present study revealed that 65.0 percent of elderly are illiterate and about 78.5 percent of elderly women are illiterate. About 25.4 percent of older persons are non-working. This study also reflected that 77.85 percent of the older persons of Bangladesh are suffering from various chronic diseases.

Keywords: Elderly population, population aging, living arrangements, working status, educational status, health status, marital status and authority of the family.

### Introduction

In developing countries like Bangladesh, the issue of aging is yet to gain the desired momentum. In Bangladesh, the age structure of the population is changing because of declines in fertility and increases in life expectancy. Decreases in fertility rates and improvement in life expectancy have led to rapid increases in the number of older people in Bangladesh. Currently about 6% of the total population in Bangladesh are aged population. The figure may be small compared to many developing countries but due to the large size of the population, it represents approximately 7.3 million. Under the assumption of replacement level of fertility the elderly population will be nearly double by the year 2025 (Kabir, 2000). The present study aims at eliciting information on different characteristics which have a bearing on the social, economical and health condition of the elderly and these characteristics influence the socio-economic performance and health status which is the subject matter of analysis and identification of the issue of aging in Bangladesh. The present study eliciting information on the educational status, working status, health status, marital status, household status and religion of the elderly people is based on the census data.

### Concept, process and perspectives of population aging

Population aging is a demographic process that occurs due to interplay between fertility and mortality in the human population. The interplay between birth and death, the two natural events, cause change in the age structure of the population and such change may affect not only the base of the population structure but also population of older age groups. The aging of population is a universal phenomenon; an inevitable result of declining fertility or birth and improved status of survival. Declining fertility reduces the proportion of the young in the population resulting in a larger proportion of the "aged". (Leete R. and Alam I., 1999)

Aging has become a focal point of emerging issues in the world's population in the present millennium. Not only are the elderly living longer, but also they are growing older in marked different ways from their predecessors. In recent years there has been an increasing interest in aging of the human population within developed and developing countries. The rapid and faster technological progress in medical sciences, control of fertility and mortality rates is resulting in increasing the life span.

Population aging is attributed to a decline in fertility,

mortality and improved public health interventions. In 2000, the world wide population of persons aged =65 years is projected to increase by approximately 490 million to 973 million, increasing from 6.9% to 12% world wide, from 15.5% to 24.35% in Europe, from 12.6% to 20.3% in North America, from 5.5% to 11.6% in Latin America, from 6.0% to 12% in Asia and from 2.9% to 3.7% in Sub-Saharan Africa (Goulding, 2003).

Population ageing is increasingly becoming an issue of concern throughout the world, especially in countries like Bangladesh where the growth rate of the older population is taking place at a much faster pace. It is seen as a major development challenge, especially in settings where there is limited institutional, human and financial resource capacity to meet the basic needs of the growing number of older persons. Population aging in Bangladesh is viewed as a natural outcome of demographic transition from high fertility and mortality to low fertility and mortality. It represents the years of successful family planning and public health programs that have changed the population growth of the country (Strong, 1992). In Bangladesh, most of the elderly people are subject to fair old age. Their daily activities are regulated with tradition values, attitudes and behavioral imperatives that old age is a time for reflection on death and withdrawal from the world.

### ***The aged or the elderly population***

The literal meaning of the term “age” refers to the time during which a person or thing has lived or existed. Likewise “aging” denotes the process of growing old or developing qualities of the old. (McDonald, 1978). It is the attainment of approximately sixty years of age when a person is usually labeled as aged. Furthermore, it is the age when a person in Government service retires from their job. Again, most of the states have laid down sixty-five years as the minimum age, as the eligibility criteria for the old age pension while in a few states the age limit is 60+.

Ryder (1975) studied the fixing of an age boundary for the elderly. His suggestion of setting a lower boundary of old age on the basis of a fixed interval to death merits consideration, so that age defining the population will not be time dependent.

In the case of Bangladesh, like many developing countries, population aged 60 and over has been considered to be the aged or the elderly population or also older persons. The present study is carried out in consideration that the population of age 60 and over as older persons is the target population for analyzing aging of the population in the context of Bangladesh.

### **Data Source**

Although a good number of surveys have been conducted in Bangladesh, at present the most complete and reliable source of information on aged population at country level and its geographic sub-divisions is the census based on house-to-house enumeration. The information presented in this study is secondary and used mainly the census data from the Bangladesh Population Census- 2001, published in July 2003. All these data were officially published by Bangladesh Bureau of Statistics (BBS), which is an agency of the Government of Bangladesh.

### ***Salient features of the elderly population***

In this study, we have tried to address the socio-economic and health status of the elderly people and discuss the strategic policy measures to be taken, that would be necessary to improve their well being.

### ***Religious status***

Table 1 represents variations between religious groups. It seems that most of the older persons are Muslim. No significant difference is observed by sex or residence. In Bangladesh, 87.7 percent of elderly are Muslim and the other 12.3 percent are different religious groups- Hindu, Buddhist, Christian or other. Among the elderly population 11.1 percent are Hindu.

### ***Marital status***

Marital status and its differentials play a vital role in composition and structure of a population. Marriage is an event that generally marks the beginning of the potential period of childbearing. Marital status is an important consideration for the elderly because it influences the physical and mental stability of older persons. In Bangladesh, marriage is universal and in our study we found very few older male and females that are still never married. Widowhood is another important consideration with reference to the elderly. In this respect from Table 2 we found a large number of elderly women falling into this category. We found a large number of elderly are still in a marital union.

From Table 2, we can see 77.3 percent elderly are married and this event is more or less equal to both rural and urban areas (72.4% and 72.5% respectively). But there seems a difference between male and female elderly, which is 92.1 percent and 47.8 percent respectively. From the Table we see that 46.1 of elderly women are widows. But in case of elder males, very few elderly are widowers (3.7 percent). In our society, divorce or separated older persons are also very few in number being only 0.3 percent.

### ***Household living status***

Persons whether related or not, living together and taking food from the same kitchen, are considered as a

household and household status is one of the important aspects of living arrangements of elderly persons. The status of aged population in households largely depends on the type of households they live in and type of families they belong to and also on the interpersonal relationships with other household members. The roles of elders in decision making depend on how much authority the elderly possess on the members of the households. Table 3 presents different types of households of older person's lives.

From the above Table 3, we see that, 99.4 percent of male and 99.6 percent of female older persons live in dwelling type of household. In urban areas 97.3 percent of elderly and in rural areas 99.5 percent of elderly live in dwelling type of households. So we conclude that most older persons, either males or females or in rural or urban areas, live in dwelling households with their families.

### **Educational status**

Education is the backbone of a nation and also is an important factor in accounting for older persons' demographic behavior. A large number of elderly persons in our country don't have any formal education and almost half of them are illiterate. From Table 4, we see that 54.1 percent of elderly males and 78.5 percent of elderly females have no formal education. Gender inequality is greatly pronounced in this respect as a large number of elderly females are illiterate with respect to their male counterparts. There is also a large difference between rural and urban areas, especially for elderly women. Table 3 represents that 56.7 and 42.1 percent of elderly males in rural and urban areas respectively, have no formal education. Also in rural areas 80.6 percent of elderly females have less education than their urban counterparts, which is 68.6 percent. The historical development of formal education focuses on the fact that before the 1950's, education was primarily confined to the upper strata of the population in our society. Formal education was perhaps out of the reach of the lower segments. Moreover, there were various social barriers for schooling especially for female children irrespective of economic condition and social settings and that phenomenon created this difference in educational status between elderly males and females and also a gap between rural and urban areas.

Very few elderly, both male and female, and both in urban or rural areas, have higher education. Only 24.5 percent of elderly males and 15.7 percent of elderly females have primary education and these percentages are higher among urban elderly than their rural counterparts. About 11.7 percent and 2.6 percent of the elderly have secondary and higher education and these percentages are higher in urban areas and also more for male elderly than their female counterparts. Only 35

elderly have completed their graduation (45.9 percent of male and 21.5 of female elderly). The same picture is found in the case of urban-rural differentials - in urban areas 46.5 percent of elderly have completed their total schooling but in rural areas that is 32.5 percent.

### **Working status**

In Bangladesh, the largest proportion of the male work force is engaged in agricultural work and the female in household work. Therefore, obviously the elderly population may continue to work in large numbers. Even after the age 60 in our study, we observed 20.7 percent of male and 31.2 percent of female elderly population are not economically active (Table 5). It is also observed that these differences significantly differ between rural and urban older persons, which is 24.1 and 31.3 percent respectively. This is because most of the older persons in rural areas are engaged at least in agricultural work.

From the above Table, we have seen that, most of the older females are doing household work (58.7%). This participation varies between rural and urban women (60.2 and 52.2 percent respectively). This is because in urban areas many older females are economically active due to their educational qualification. The participation of older women in agricultural work is only 4.6 percent, in urban 3.1 and in rural 4.9 percent. We observed that the participation of female elderly population in industrial or construction or other jobs, is very poor for both urban and rural areas (Table 5).

On the other hand, most of the aged male population (51.3%) is engaged in agricultural work, which is 51.3 percent. A larger proportion of rural older persons are involved in this work (57.9%) than their urban counterparts (22.5%). In transport, construction or job in hotel and restaurant and other industrial work, there is very low participation of older males. In urban areas 18.6 percent of elderly males are involved in business but in rural areas that is only 7.3 percent.

### **Health status**

Health is a major concern of old age. In old age the elderly are found to suffer from diseases like arthritis, back pain, high blood pressure, diabetes, asthma, ulcer, genito-urinary diseases and so on. Prevalence of malnutrition, eyesight and hearing problems and mental disorders among the elderly are also observed. However, the perception of health problems declines with advancing age. The health problems in old age are often compounded by attributing ailments of onset of old age.

Old age is only one factor that causes stress in the elderly person's life. Poverty, inaccessible services and lack of financial support make it difficult for them to weather stresses inherent to Bangladeshi life. In our study, from

Table 6 we can say, almost 25.9 percent of elderly males and 19.5 percent of females have no chronic diseases and also there is a difference between rural and urban areas. In rural areas 26.5 percent of elderly and in urban areas 19.0 percent of elderly, have no chronic disease. Arthritis, and back pain are the main chronic diseases. In our study we observed that elderly females have more chronic diseases than their male counterparts. 31.5 percent of female elderly and 21.8 percent of male elderly have arthritis and 19.0 percent of females and 13.8 percent of males have back pain. These diseases also differ for young-old and old-old, i.e. for the age group 60-69, the diseases arthritis, back pain, high blood pressure are 25.3%, 17.8% and 7.8% respectively and for the old-old elderly, i.e. aged 70+, arthritis, back pain, high blood pressure are 28.4%, 13.5% and 7.1% respectively. High blood pressure differs from urban to rural areas, which is 10.7 and 4.6 percent respectively.

From Table 3 we see, heart problems are higher among those elderly who live in urban areas than their rural counterparts, which is 1.8 percent in rural areas and 8.3 percent in urban areas. About 5.5 percent and 3.9 percent of elderly suffer from asthma in rural and urban areas respectively. Due to limited medical services and urban-rural differences among the medical services, less access to health care, lack of care and mental support lead to these health problems for the elderly.

#### Conclusion and Recommendations

Elderly are the oldest age cohort. They have less exposure to modernization, have less education and less or no potentiality of work. They are indifferent about life and are aloof from worldly affairs. They are more or less dependent, rigid and unchangeable and also less adaptable. Above all they are the most disorganized group. They are somewhat voiceless and emotional.

Well-being of the elderly is a great challenge to us. To meet the challenge we need some solid policies and programs especially addressing the older segment of our population. Government alone cannot solve the problems of the elderly. There are many pressing issues, that the government has given priority to solving. Within budgetary constraints government is trying to do something about the well-being of the elderly.

But it is not only the job of government. INGOs, NGOs, and well-to-do persons of society should come forward to meet the challenges. There is a need to assess the short and the medium term needs of older people, in particular their basic needs - food, health, housing and care. This should be paired with available resources- the nature of livelihood and the extent of family support, taking into account trends in living arrangements and changes in household structures; the possible need to supplement

the role of family networks and civil society at large; the prospects of further involvement of the elderly in the labor force and the desirability and feasibility of such an involvement.

The situation of the elderly cannot be fully explored due to unavailability of appropriate data. Therefore, a National Survey on Aging should be taken immediately. Also a Need Assessment Survey should be initiated without delay. Above all a Population Aging Research Center should be established to do research and studies of the problems and issues of the elderly population of Bangladesh.

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**Table 1:** Distribution of older persons by religion

Religion	Sex	Muslim	Hindu	Buddhist	Christian	Other
Rural	Male	88.1	10.7	0.7	0.3	0.2
	Female	87.2	11.6	0.7	0.3	0.2
	Total	87.7	11.1	0.7	0.3	0.2
Urban	Male	88.5	10.2	0.8	0.4	0.1
	Female	88.7	11.9	0.9	0.4	0.1
	Total	87.8	10.9	0.8	0.4	0.1
Total	Male	88.2	10.6	0.7	0.3	0.2
	Female	87.1	11.7	0.7	0.3	0.2
	Total	87.7	11.1	0.7	0.3	0.2

**Table 2:** Distribution of older persons by marital status

Marital status	Elderly population (%)								
	Rural			Urban			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Never married	3.9	4.9	4.6	4.8	6.4	5.5	4.1	5.7	4.8
Married	92.9	48.2	72.4	91.4	47.5	72.5	92.1	47.8	77.3
Widow/widower	3.8	46.4	22.8	3.7	45.5	21.7	3.7	46.1	22.6
Divorced/separated	0.1	0.5	0.2	0.1	0.6	0.3	0.1	0.4	0.3

**Table 3:** Household living status of older people

Household type	Rural			Urban			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Dwelling	99.4	99.6	99.5	96.1	98.7	97.3	98.8	99.4	99.1
Institutional	0.3	0.2	0.2	1.5	0.7	1.1	0.5	0.3	0.4
Others	0.3	0.2	0.3	2.4	0.6	1.6	0.7	0.3	0.5

**Table 4:** Distribution of older persons by years of schooling

Years of schooling	Elderly population (%)								
	Rural			Urban			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
No education	56.7	80.6	67.5	42.1	68.6	53.5	54.1	78.5	65.0
1-5	24.7	14.9	20.2	22.0	19.4	21.6	24.5	15.7	20.7
6-10	15.7	4.2	10.7	23.6	10.3	17.6	17.0	5.2	11.7
11+	2.9	0.3	1.6	12.3	1.7	7.3	4.4	0.6	2.6
Total schooling	43.3	19.4	32.5	57.9	31.4	46.5	45.9	21.5	35.0

**Table 5:** Distribution of the older persons by working status

Working status	Elderly population (%)								
	Rural			Urban			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Not working	19.4	29.9	24.1	36.7	37.4	31.3	20.7	31.2	24.4
Household	3.6	60.2	28.9	2.9	52.2	24.2	3.4	58.7	28.0
Agriculture	57.9	4.9	34.1	22.5	3.1	14.1	51.3	4.6	30.6
Industry	0.8	0.2	0.5	1.9	0.3	1.3	0.9	0.2	0.6
Construction	0.7	0.03	0.4	1.9	0.2	1.1	0.9	0.05	0.5
Transport and communication	0.6	0.02	0.4	2.2	0.06	1.3	0.9	0.02	0.5
Hotel and restaurant	0.05	0.01	0.05	0.3	0.05	0.2	0.1	0.01	0.06
Business	7.3	0.3	4.2	18.6	0.8	10.9	9.4	0.4	505
Service	0.9	0.2	0.6	1.7	0.3	1.1	1.0	0.2	0.7
Others	8.7	4.2	6.7	21.1	5.5	14.4	10.9	4.5	8.1

**Table 6:** Distribution of older persons according to main chronic diseases

Main chronic diseases	Age		Sex		Residence	
	60-69	70+	Male	Female	Rural	Urban
Arthritis	25.3	28.4	21.8	31.5	36.9	25.9
Back pain	17.8	13.5	13.8	19.0	12.8	20.0
High blood pressure	7.8	7.1	8.0	6.0	4.6	10.7
Diabetes	20.2	6.5	4.9	3.5	0.9	6.8
Heart problem	4.1	6.5	5.4	4.5	1.8	8.3
Ulcer	5.6	9.0	7.6	6.0	8.7	4.9
Asthma	4.5	5.2	6.3	3.0	5.5	3.9
Other	7.8	4.5	6.3	7.0	12.3	0.5
No Chronic disease	24.9	19.3	25.9	19.5	26.5	19.0

Source: Abedin, 1999; Table 7.