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## Contents



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# Editorial

***Dr Abdul Abyad***
Chief Editor

In this issue of the journal there is a summary of the meeting that took place under the Auspices of International Association for Gerontology and Geriatrics. The meeting titled "Is there a place for IAGG in the Middle East?" took place at Hamad Medical City Doha in Qatar. The meeting discussed the important issue of creating a Middle East Section under IAGG and it was agreed to pursue the matter further and to lobby for the creation of such a section in the coming meeting of IAGG in Seoul Korea.

A paper from Bangladesh looked at the Speculative Explanation about the People of Growing Elderly. The authors stressed that elderly is an unavoidable stage of human life. It is associated with physical, social, psychological aspects of life. Ageing is the accumulation of changes in an organism or object over time. It refers to a multidimensional process of physical, psychological and social change. Especially, it has social explanation because of the people of society determine the shape, structure and characteristics of elderly. There are many theories have been developed by the biologist, sociologist and psychologist regarding the explanation of the ageing process or growing elderly. This article focuses on the different theories of elderly. The role that should be performed by the people at the different stage of ageing process, have been recommended in this article.

Impact of Rheumatoid Arthritis on Health Related Quality of Life in Elder Patients. A cross-sectional study from Cairo was conducted to assess the relationship and effect of rheumatoid arthritis on quality of life of elderly subjects. The authors studied a total of 100 elderly subjects 60 years old and above were diagnosed with RA. DAS 28 score was significantly related to age, duration of illness, presence of depression, and functional status. The DAS 28 score was significantly related to the whole 8 dimensions of RAND-36 Health Survey. The authors concluded that RAND-36 Health Survey deserves serious consideration for inclusion in the core set of outcomes in RA trials.

A paper from India looked at infant mortality which has impact on ageing. The authors stressed that in India, direct estimation of child mortality rates is not possible due to insufficient death registration. State and district level child mortality estimates obtained by Brass method from 1991 and 2001 census data were improved by logit smoothing. Using two of the smoothed child mortality estimates, infant mortality estimate is obtained by fitting a two parameter Weibull survival function. The authors concluded that the reliability of the estimates have been established by cross checking with the 1991 and 2001 census data on the increase/decrease of percentage of children dead. Udupi and West Kameng district has the lowest and highest infant mortality rate respectively.

*Original Contribution/Clinical Investigation*

# Impact of Rheumatoid Arthritis on Health Related Quality of Life in Elderly Patients

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## ABSTRACT

**The study was a cross-sectional study conducted to assess the relationship and effect of rheumatoid arthritis on quality of life of elderly subjects.**

**Methods: 100 elderly subjects 60 years old and above were diagnosed with RA. Severity of the disease was assessed using Disease Activity Score (DAS) 28 score, and the quality of life was assessed using RAND-36 Health Survey.**

**Results: DAS 28 score was significantly related to age, duration of illness, presence of depression, and functional status. The DAS 28 score was significantly related to the whole 8 dimensions of RAND-36 Health Survey. Using Spearman's rho correlation, we found significant positive correlations between the DAS 28 score and age, duration of illness, depression, and functional status. There were significant negative correlations between the DAS 28 score and the whole 8 items of RAND-36 Health Survey.**

**To conclude: RAND-36 Health Survey deserves serious consideration for inclusion in the core set of outcomes in RA trials.**

**Key words: rheumatoid arthritis, quality of life, elderly**

## Introduction

Rheumatoid arthritis (RA), a multisystem disorder characterized by chronic destructive synovitis, can have substantial adverse health consequences for those who are affected. Although the clinical course and outcomes vary widely among individuals, it is well established that persons with persistent RA experience progressive disability and early mortality. [1]

The prevalence of RA in persons 60 years of age and older, is approximately 2%, representing the proportion of the US elderly population who will most likely require medical intervention because of disease activity. [2]

The impact of chronic diseases, including RA, on patients' lives has been defined in terms of three different levels defined by the World Health Organization: impairment, disability and handicap. In essence impairment is a loss of anatomical or psychological function, disability is an inability to perform normal activities due to impairment and handicap is the disadvantage for an individual resulting from an impairment or disability that limits the fulfilment of a normal role in life. [3]

Mortality has been found to be increased among people with diagnosed RA in multiple studies. Over the past half century, many studies have found mortality to be increased in patients with established RA in comparison with the general population. Around 40% of all deaths in individuals with RA are attributable to cardiovascular causes, including ischemic heart disease and stroke. [4]

As current treatment neither prevents nor cures rheumatoid arthritis (RA), the main management aim is to reduce the impact of the disease on patients' lives by improving quality of life and reducing disability. Clinicians consider that the most important effects of RA for patients are persistent pain and loss of function - attributable to the combined effect of continuing synovitis and progressive joint damage. However RA affects many aspects of individuals' lives and its impact extends beyond those areas traditionally considered to be within the domain of medical intervention. [3]

The term health related quality of life (HRQoL) refers to those aspects of life which are affected by health e.g. functional status, and excludes other determinants of QoL e.g.: income, job security or living conditions. Measuring of HRQoL provides patients with an opportunity to participate more fully in their treatment and ultimately facilitate better communication with the multi-disciplinary team of health professionals involved in their care. In addition to more objective clinical indicators of disease, measurement of HRQoL, allows for a more comprehensive assessment and in some cases may prove to be a more sensitive indicator of treatment response than measures of disease activity or damages. [5]

Increasing focus on patients' perspectives of their health has resulted in an increasing interest in using health status measures in RA patients to capture patients' views on their disease. Disability in RA is usually measured with self-assessment questionnaires. [6]The most commonly used measure of HRQoL is the short form (SF)-36, which is a self-report questionnaire. It was designed to be used in a variety of conditions, populations, and settings. [7]

As a generic QoL measure, the SF-36 is better suited to capture the holistic health of the patient, as reflected in the World Health Organization definition of health as being not only the avoidance of disease but the physical, emotional, and social well-being of the patient. Furthermore, use of the SF-36 permits comparisons of physical and mental aspects of QoL in the RA patient population, as well as comparisons of QoL parameters between patients with RA, other patient groups, and the general population. [8]

## Subjects and Methods

**Study setting and sample:**

- A cross-sectional study was conducted to assess the relationship and effect of rheumatoid arthritis on quality of life of elderly subjects.
- 100 elderly subjects 60 years old and above diagnosed with RA (Both males: n=18, and females: n= 82) were recruited from rheumatology outpatient clinics, over 6 months from January to June, 2012. They received treatment in the form of methotrexate 10-15 mg weekly, folic acid 5 mg weekly and NSAIDs prn.

**Data collection:**

- All subjects were subjected to:

**1. Informed oral consent.**
**2. Comprehensive geriatric assessment.**
**3. Disease Activity Score [DAS 28 score]:**
The subjects were classified according to the severity of the disease using DAS 28 score into: patients with remission of the disease, patients with low disease activity, patients with moderate disease activity and patients with high disease activity.

The DAS 28 is a measure of disease activity in rheumatoid arthritis (RA) the number 28 refers to the 28 joints (commonly affected by RA) that are examined in the assessment. An assessment of DAS involves the rheumatologist or specialist nurse looking at the number of tender and swollen joints (out of the 28), the erythrocyte sedimentation rate (ESR) or C reactive protein (CRP) both of which measure the degree of inflammation in the blood, and the patient's 'global assessment of health' (indicated by marking a 10 cm line between very good and very bad). These results are then fed into a complex mathematical formula to produce the overall disease activity score. [9]

DAS 28 is widely used as an indicator of RA disease activity and response to treatment. The joints included in DAS28 are bilaterally: proximal interphalangeal joints (10 joints), metacarpophalangeal joints (10 joints), wrists (2 joints), elbows (2 joints), shoulders (2 joints) and knees (2 joints). When looking at these joints, both the number of joints with tenderness upon touching (TEN28) and swelling (SW28) are counted. In addition, the erythrocyte sedimentation rate (ESR) is measured. Also, the patient makes a subjective assessment (SA) of disease activity during the preceding 7 days on a scale between 0 and 100, where 0 is "no activity" and 100 is "highest activity

possible". These results are then fed into a complex mathematical formula to produce the overall disease activity score. With these parameters, DAS28 is calculated by using an online calculator: http://www.das-score.nl/www.das-score.nl/dasculators.html

Results more than 5.1 are considered high disease activity, less than 5.1 and more than 3.2 are considered moderate disease activity, less than 3.2 and more than 2.6 are considered mild disease activity, while 2.6 and less are considered disease remission. [10]

**4. Assessment of health related QoL using the Arabic version of the RAND-36 Health Survey:** [11]
RAND-36 Health Survey is a generic health-related quality-of-life measure. It is comprised of the same items included in the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36). [12] Both measures emanated from work begun at RAND in 1984 as part of the Medical Outcomes Study (MOS) and include multi-item scales that assess eight health concepts: physical functioning, bodily pain, role limitations due to physical health problems, role limitations due to emotional problems, mental health (emotional well-being), social functioning, vitality (energy/fatigue), and general health. The only difference between the measures is the scoring algorithm applied when calculating two of the scale scores (i.e. general health, bodily pain), which is independent of the measurement process. Hence, for the purpose of comparability with published general population norms, SF-36 scoring was used.

All scales were transformed linearly to a 0 to 100 possible range of scores, with 0 and 100 representing the least and most favorable health state, respectively. All scores reflect the percent of the total possible score for that scale. For comparison of scores from a sample to that of the US general population, scoring of the RAND-36 followed the procedures used for the published norms for the SF-36. For other analyses, scoring of the pain and general health perception scales followed the RAND-36 recommendations. [13]

**Exclusion criteria:**
The study did not include subjects with any chronic condition known to affect the QoL e.g. diabetes mellitus, renal failure, chronic liver disease, chronic obstructive pulmonary disease (COPD), depression, stroke, dementia, and auditory or visual impairment.

**Statistical Methods:**
All data were entered into the 21th version of SPSS (Statistical Package of Social Science), and analyzed using frequency and descriptive statistics to analyze the study population. Frequency and percentage for all qualitative variables, description of all data in the form of mean (M) and standard deviation (SD) for all quantitative variables were calculated. Comparison of qualitative variables was done using Chi-square test; it is a test that determines the extent that a single observed series of proportions differs from a theoretical or expected distribution of proportions, or the extent that two or more series of proportions or frequencies differ from one another based on the chi-square distribution. Comparison between quantitative variables was done using ANOVA (analysis of variance) to compare more than two groups.

The Spearman's rho and Kendall's tau-b statistics measure the rank-order association between two scales or ordinal variables, they work regardless of the distributions of the variables.
A variable can be treated as a scale (continuous) when its values represent ordered categories with a meaningful metric, so that distance comparisons between values are appropriate.
A variable can be treated as ordinal when its values represent categories with some intrinsic ranking.

Spearman's rho is based on rank orders, which are unchanged by log transformation. Moreover, outliers have less of an effect on Spearman's rho, so it is possible to save some time and effort by using it as a measure of association instead of Pearson correlation.

The level of significance for the statistical tests was taken at P value < 0.05 is significant, otherwise it is non-significant.

## Results

The study sample included 100 elderly patients, 18% males and 82% females, mean age 67.40, SD: ±4.8, minimum age: 60 and maximum age: 80, the patients with elderly onset of the disease: 41% and those without: 59%, the maximum duration of illness: 45 years and the minimum: 1 year. 58% were depressed and 42% were not. 52% were independent, 36% were assisted and 12% were dependent. The mean DAS 28 score was 3.8 (min: 1.4 and max: 7.3), 195 were in remission, 28% had mild activity, 31% had moderate activity and 22% had severe activity. The results revealed that sex is not significantly related to the severity of the disease, while DAS 28 score was significantly related to age (P: 0.03), duration of illness (P: 0.000), presence of depression (P: 0.026), and functional status (P: 0.02).The DAS 28 score was significantly related to the whole 8 dimensions of RAND-36 Health Survey. By using Spearman's rho correlation, we found significant positive correlations between the DAS 28 score and age (r: 0.231 P: 0.021), duration of illness (r: 0.204 P: 0.042), depression (r: 0.244 P: 0.014), and functional status (r: 0.355 P: 0.000), and significant negative correlations between the DAS 28 score and the whole 8 items of RAND-36 Health Survey.

(See Table 1: Demography and description of the study sample, next page)

## Discussion

Health is a multidimensional construct that includes biological, psychological and social features. Health (or the lack of it) is determined by the complex interactions among environmental/social factors and the psychological and biological characteristics of the individual.

The impact of chronic illness on the lives of patients has been a tradition in medical sociology. In chronic diseases, such as RA, traditional epidemiological measures of disease outcome reflect only the physical dimension of the disease and neglect the mental and social aspects. In recent years, there has been a great interest in quality of life measures that reflect physical, mental and social dimensions together.

| Items | Description |
|---|---|
| Age | Min: 60 Max: 80<br>Mean: 67.40 SD: ±4.8 |
| Sex | Male: 18 (18%) Female: 82 (82%) |
| Elderly onset of disease | Yes: 41 (41%) No: 59 (59%) |
| Duration of illness | Min: 1 Max: 45<br>Mean: 12.3 SD: ±9.01 |
| Depression | Present: 58 (58%)<br>Absent: 42 (42%) |
| Function | Independent 52 (52%)<br>Assisted 36 (36%)<br>Dependent 12 (12%) |
| DAS 28 score | Min: 1.4 Max: 7.3<br>Mean: 3.8 SD: ±1.5 |
| DAS 28 degree | Remission: 19 (19%)<br>Low (mild) activity: 28 (28%)<br>Moderate activity: 31 (31%)<br>Severe activity: 22 (22%) |

**Table 1: Demography and description of the study sample**

A number of large population-based studies had examined the effects of RA on disability and physical function, but few had assessed overall health-related quality of life in RA patients and its relation to the severity of the disease. So, the aim of the current study was to examine the association between severity of RA and health-related quality of life among Egyptian elderly adults aged 60 years and older, and this body of research showed clearly that RA had a major impact on lives of elderly patients.

This study revealed that the DAS 28 severity score had significant negative correlation with the 8 items of RAND-36 Health Survey, meaning that the QoL was significantly decreased with increased severity of RA.

These results were supported by Paananen et al, [14] who reported that the symptoms and consequences of arthritis often resulted in limitations in functional capacity and the ability to perform activities of daily living, severe pain, psychological distress, and depression. They added that one health outcome of primary interest in patients with arthritis was health-related quality of life, and that arthritis could affect several of the physical and psychological health domains.

As regards disability and functional impairment in RA patients, the results were supported by Fausto et al, [15] who conducted a study showed that adults with RA had poorer self-reported health status than those without arthritis in all domains of living, but particularly with respect to scales measuring aspects of physical functioning or mobility, role

| Variables | DAS 28 score | | | |
|---|---|---|---|---|
| | | Mean | SD | |
| Age | Remission: | 65.7 | 4.9 | *F: 3.02* |
| | Mild: | 66.0 | 4.4 | *P: 0.03* |
| | Moderate: | 68.5 | 3.3 | |
| | Severe: | 68.9 | 6.0 | |
| Duration of illness | Remission: | 9.0 | 4.4 | *F: 8.2* |
| | Mild: | 9.5 | 3.7 | *P: 0.000* |
| | Moderate: | 12.6 | 7.1 | |
| | Severe: | 21.4 | 16.5 | |
| Sex | | Male | Female | *$X^2$: 4.9* |
| | Remission: | 3 | 16 | *P: 0.17* |
| | Mild: | 8 | 20 | |
| | Moderate: | 6 | 25 | |
| | Severe: | 1 | 21 | |
| Depression | | Depressed | not depressed | *$X^2$: 9.2* |
| | Remission: | 6 | 13 | *P: 0.026* |
| | Mild: | 15 | 13 | |
| | Moderate: | 23 | 8 | |
| | Severe: | 14 | 8 | |
| Function | | Independent | assisted | dependent | *$X^2$: 14.8* |
| | Remission: | 14 | 5 | 0 | *P: 0.022* |
| | Mild: | 18 | 7 | 3 | |
| | Moderate: | 14 | 14 | 3 | |
| | Severe: | 6 | 10 | 6 | |

**Table 2: Relationship between severity of rheumatoid arthritis using DAS 28 score on demographic and clinical variables of RA patients**

| RAND-36 items | DAS 28 score: | Mean | SD | ANOVA |
|---|---|---|---|---|
| Physical functioning | Remission: | 789.4 | 167.1 | *F: 19.3* |
| | Mild: | 725.0 | 111.8 | *P: 0.000* |
| | Moderate: | 582.2 | 180.0 | |
| | Severe: | 456.8 | 169.9 | |
| Role limitation due to physical health | Remission: | 268.4 | 88.5 | *F: 5.5* |
| | Mild: | 239.2 | 83.1 | *P: 0.001* |
| | Moderate: | 193.5 | 118.1 | |
| | Severe: | 154.5 | 96.2 | |
| Role limitation due to emotional problems | Remission: | 194.7 | 77.9 | *F: 5.7* |
| | Mild: | 189.2 | 103.0 | *P: 0.001* |
| | Moderate: | 125.8 | 77.3 | |
| | Severe: | 109.0 | 92.1 | |
| Energy / fatigue | Remission: | 290.5 | 79.5 | *F: 6.2* |
| | Mild: | 263.5 | 91.4 | *P: 0.001* |
| | Moderate: | 208.3 | 110.8 | |
| | Severe: | 179.0 | 92.0 | |
| Emotional well-being | Remission: | 375.7 | 85.7 | *F: 12.4* |
| | Mild: | 325.7 | 99.9 | *P: 0.000* |
| | Moderate: | 245.1 | 111.5 | |
| | Severe: | 201.8 | 111.4 | |
| Social functioning | Remission: | 148.6 | 35.8 | *F: 4.9* |
| | Mild: | 125.8 | 55.0 | *P: 0.003* |
| | Moderate: | 102.4 | 59.9 | |
| | Severe: | 88.6 | 62.0 | |
| Pain | Remission: | 138.6 | 46.2 | *F: 3.2* |
| | Mild: | 122.3 | 36.8 | *P: 0.02* |
| | Moderate: | 106.1 | 57.5 | |
| | Severe: | 92.2 | 60.8 | |
| General health | Remission: | 355.2 | 124.6 | *F: 12.3* |
| | Mild: | 360.7 | 105.7 | *P: 0.000* |
| | Moderate: | 241.9 | 137.8 | |
| | Severe: | 181.8 | 112.6 | |

**Table 3: Effect of severity of rheumatoid arthritis using DAS 28 score on different items of RAND-36 Health Survey**

limitation due to physical health problems and usual activities, and bodily pain. They reported that the disease with the worst HRQL for physical dimensions of SF-36 was RA.

Also Kirwin [16] similarly, concluded that disease activity remains the major determinant of disability in RA, both late in the disease and in patients with substantial radiographic damage.

Another study was conducted by Haroon et al, [17] for assessment of impact of rheumatoid arthritis on quality of life; the study included seventy-five age-matched normal controls and 136 patients (19 males). QoL was assessed using the World Health Organization Quality of Life assessment, short form (WHOQOL-BREF). Disease activity was assessed by the Disease Activity Score (DAS28), and functional disability was assessed by the Health Assessment Questionnaire (HAQ). Extra-articular manifestations were diagnosed clinically. The study concluded that functional disability is the most important factor affecting QoL in RA.

Interestingly, Jumprl et al, [18] stated that social support had been found to minimize the effects of physical limitations resulting from RA.

Regarding pain and emotional troubles, our results were supported by Hakkinen et al, [19] who stated that pain was one of the most common causes for patients to seek medical help, and that almost all of the drugs used in arthritis, including analgesics, anti-inflammatory drugs, disease-modifying anti-rheumatic drugs (DMARDs) and biological medicines, all targeted pain relief to a greater or lesser extent. They added that despite

| Scale variables | Correlation coefficient (r): | *P* |
|---|---|---|
| Age | 0.231 | 0.021 |
| Duration of illness | 0.204 | 0.042 |
| Physical functioning | -0.591 | 0.000 |
| Role limitation due to physical health | -0.355 | 0.000 |
| Role limitation due to emotional problems | -0.338 | 0.001 |
| Energy / fatigue | -0.336 | 0.001 |
| Emotional well-being | -0.473 | 0.000 |
| Social functioning | -0.293 | 0.003 |
| Pain | -0.185 | 0.066 |
| General health | -0.481 | 0.000 |

**Table 4: Correlations between severity of RA measured by DAS 28 score and different scale variables (age, duration of illness and items of RAND-36 Health Survey) using Spearman's rho**

| Ordinal variables | Correlation coefficient (r): | *P* |
|---|---|---|
| Sex | -0.139 | 0.169 |
| Depression | 0.244 | 0.014 |
| Function | 0.355 | 0.000 |

**Table 5: Correlations between severity of RA measured by DAS 28 score and different ordinal variables (sex and elderly onset) using Spearman's rho**

such treatment, many patients continued to have considerable amounts of pain, and that pain scores were widely distributed over the whole range of severity and many patients had high or low scores. They added also that higher pain levels had been shown to correlate with disability as well as depression which all contributed significantly to a reduction in quality of life for patients with RA.

Also Jumprl et al, [18] reported that RA often caused chronic pain and the effects of chronic pain on patients' physical, psychological and social functioning had been widely recognised. They added that other factors other than pain had been found to be important in psychological adjustment in patients with RA; specifically social support which was particularly significant in adjustment to RA given the limitations that physical disability may create. They added that the situation was further complicated by RA patients with a pre-existing history of an affective disorder such as depression; who had higher levels of fatigue and ill health, with self-efficacy playing an important mediating role in this relationship.

Again, Jumprl et al, [18] stated that depression, which was often associated with high levels of fatigue, had been identified as a problem for a large proportion of patients with RA, and added that some studies had suggested that depressive symptoms were present in 25% or more of patients. They added that many patients also had high levels of anxiety, and depression and that had been shown to be associated with reduced health status, as well as higher pain and fatigue levels and reduced quality of life.

As regards fatigue element in RAND-36 score, Scott et al, [20] agreed with our finding as they reported that clinically significant fatigue was present in 40-80% of patients with RA, and that patients regarded fatigue as a major determinant of

their quality of life and disability. They found that qualitative research had confirmed that RA patients believed reducing fatigue should have been a key treatment aim and absence of fatigue was one of the components of remission, which was the principal therapeutic goal in RA.

Regarding other clinical and demographic variables of the patients and their relation to DAS 28 score, we found that age and duration of illness were significantly positively correlated to the severity of RA, while sex and elderly onset RA (EORA) were not associated with the severity of the disease.

The issue of (EORA) was discussed in the literature of RA; as the severity of the disease in (EORA) is found to be related to the presence of positive rheumatoid factor (seropositive disease), and positive anti-CCP not just the late onset of the disease.

Quinn et al, [21] stated that anti-CCP seropositivity and elevated inflammatory markers at onset were associated with poor radiological outcome in both early and late onset.

Also Van Gaalen and Breedveld [22] reported that once a clinical diagnosis of RA was made, several laboratory tests should have been done, and that rheumatoid factor was one of the diagnostic criteria and was positive in about 70% of RA patients. They added that when positive it was a poor prognostic factor, and that higher the level, the poorer the prognosis for most patients.

Among the elderly population, RA has 2 clinical presentations: elderly-onset RA and advanced RA. Elderly-onset RA is the development of RA in persons older than 60 years; it is characterized by an acute-onset, pronounced elevations in ESR; disabling morning stiffness; and marked pain predominantly affecting the upper extremities. The physical examination is remarkable for synovitis of the shoulders, wrists, MCP joints, and PIP joints, with marked limitation of range of motion and severe soft-tissue swelling. Some investigators have stressed the involvement of large joints as a striking feature of elderly-onset RA, as seen in our patient. [23]

Many studies supported that the duration of illness was significantly related to the severity of the disease, e.g Van Schaardenburg and Breedveld, [23] stated that inflammatory arthritis could develop in older patients before the age of 65 years and could persist for decades, resulting in patients who had advanced RA, and most had received multiple therapies and had undergone elective joint surgery.

Also, Hakala et al, [24] reported that disability started early in the course of the disease and raised in a linear fashion. They added that within 10 years of disease onset, at least 50% of patients in developed countries were unable to hold down a full-time job, and those whose disease started early (before the age of 45 years) were more likely to become severely disabled than those whose disease started at an older age (≥70 years)

## Conclusion

Despite conventional treatment, RA still has many deleterious consequences. From the patients' perspective, these include persistent pain, functional disability, fatigue, and depression modified by health beliefs and underlying psychological problems. Disability is a consequence of pain, active synovitis and joint damage.

Chronic disease accounts for the majority of health care expenditures in the whole world. The primary goals of health care for a chronic disease, such as RA, are to minimize functional loss, maintain independence, and preserve quality of life. Identifying the determinants of health status outcomes and the relationships among these determinants may lead to comprehensive interventions that might reduce the social and economic costs associated with RA.

Healthcare programs for the elderly should take into account the multi-dimensionality of health and social inequalities so that interventions can target the most affected elements of HRQOL as well as the most vulnerable subgroups of the population.

## References


1. Ollier WER, Harrison B, Symmons D. What is the natural history of rheumatoid arthritis? Best Pract Res Clin Rheumatol, 2001; 15: 27-48.
2. Elizabeth K. Rasch, Rosemarie Hirsch, Ryne Paulose-Ram, Marc C. Hochberg. Prevalence of Rheumatoid Arthritis in Persons 60 Years of Age and Older in the United States. Arthritis & Rheumatism, 2003; 48: 917-926.
3. Ciezaa and Stucki G. New approaches to understanding the impact of musculoskeletal conditions. Best Pract Res Clin Rheumatol, 2004; 18:141-54.
4. Ymmons DP and Gabriel SE. Epidemiology of CVD in rheumatic disease, with a focus on RA and SLE. Nat Rev Rheumatol, 2011; 7(7): 399 - 408.
5. McElhone K, Abbott J, Teh LS. A review of health related quality of life in systemic lupus erythematosus. Lupus. 2006; 15(10):633 - 43.
6. Scott DL and Garrood T. Quality of life measures: use and abuse. Baillière's Best Pract Res Clin Rheumatol, 2000; 14: 663-87.
7. West E and Jonsson SW. Health-related quality of life in rheumatoid arthritis in Northern Sweden: a comparison between patients with early RA, patients with medium-term disease and controls using SF-36. Clin Rheumatol 2005; 24: 117-22.
8. Tugwell P, Idzerda L, Wells GA. Generic quality of life assessment in rheumatoid arthritis. Am J Manag Care. 2008; 14(4): 234.
9. Fransen J and van Riel. The Disease Activity Score and the EULAR response criteria. Clin Exp Rheumatol, 2005; 23: 93-99.
10. Prevoo, M. L.; Van 't Hof, M. A.; Kuper, H. H.; Van Leeuwen, M. A.; Van De Putte, L. B.; Van Riel, P. L. Modified disease activity scores that include twenty-eight-joint counts. Development and validation in a prospective longitudinal study of patients with rheumatoid arthritis. Arthritis and rheumatism, 1995; 38(1): 44-48.

11. Coons, SJ, Alabdulmohsin, SA, Draugalis, JR, & Hays, RD. Reliability of an Arabic Version of the RAND 36-Item Health Survey and its Equivalence to the US-English Version. Medical Care, 1998; 36: 428-432.
12. Ware JE Jr, Sherbourne CD. The MOS 36-Item Short-Form Health Survey (SF-36): I. Conceptual framework and item selection. Med Care, 1992; 30:473.
13. Hays RD, Sherbourne CD, Mazel RM. The RAND 36-Item Health Survey 1.0. Health Econ, 1993; 2:217.
14. Paananen M, Taimela S, Auvinen J, et al. Impact of Self-Reported Musculoskeletal Pain on Health-Related Quality of Life among Young Adults. Pain Med, 2011; 12:9-17.
15. Fausto Salaffi, Marina Carotti, Stefania Gasparini, et al. The health-related quality of life in rheumatoid arthritis, ankylosing spondylitis, and psoriatic arthritis: a comparison with a selected sample of healthy people. Health and Quality of Life outcomes, 2009; 7: 25.
16. Kirwin JR. Links between radiological change, disability and pathology in rheumatoid arthritis. J Rheumatol, 2001; 28: 881-6.
17. Haroon, Nigil, Aggarwal et al. Impact of rheumatoid arthritis on quality of life. Modern Rheumatology, 2007; 17: 290-295.
18. Jumprl, Fifield J, Tennen H, et al. History of affective disorder and the experience of fatigue in rheumatoid arthritis. Arthritis Rheum 2004; 51: 239-45.
19. Hakkinen A, Kautiainen H, Hannonen P, et al. Pain and joint mobility explain individual subdimensions of the health assessment questionnaire (HAQ) disability index in patients with rheumatoid arthritis. Ann Rheum Dis, 2005; 64: 59-63.
20. Scott DL, Smith C, Kingsley G: What are the consequences of early rheumatoid arthritis for the individual? Best Pract Res Clin Rheumatol, 2005; 19: 117-36.
21. Quinn MA, Gough A, Green MJ, et al. Anti-CCP antibodies measured at disease onset help identify seronegative rheumatoid arthritis and predict radiological and functional outcome. Rheumatology, 2006; 45: 478-480.
22. Van Gaalen FA, Linn-Rasker SP, van Venrooij WJ, de Jong BA, Breedveld FC,Verweij CL, Toes RE, Huizinga TW. Autoantibodies to cyclic citrullinated peptides predict progression to rheumatoid arthritis in patients with undifferentiated arthritis: a prospective cohort study. Arthritis Rheum. 2004 Mar; 50(3):709-15.
23. Van Schaardenburg D, Breedveld FC. Elderly-onset rheumatoid arthritis. Semin Arthritis Rheum. 1994; 23:367-378.
24. Hakala M, Nieminen P, Koivisto O. More evidence from a community based series of better outcome in rheumatoid arthritis. Data on the effect of multidisciplinary care on the retention of functional ability. Journal of Rheumatology, 1994; 21:1432-7

*Review Article*

# Speculative Explanation about People Growing Elderly: An Overview

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## ABSTRACT

**Elderly is an unavoidable stage of human life. It is associated with physical, social and psychological aspects of life. Ageing is the accumulation of changes in an organism or object over time. It refers to a multidimensional process of physical, psychological and social change. Especially, it has social explanation because the people of society determine the shape, structure and characteristics of elderly. There are many theories that have been developed by the biologist, sociologist and psychologist regarding the explanation of the ageing process or growing elderly. This article focuses on the different theories of elderly. The role that should be performed by the people at the different stages of the ageing process, have been recommended in this article.**

**Key words: Elderly, Different Theories; Disengagement, Activity, Wear and Tear**

## Introduction

Aging is associated with increased age. Generally it refers to progressive deterioration of cells, tissues, organs etc, but it also refers to positive aspects of growing old: becoming wiser, evolution of life style, mellowing and so on. Though most people think that elderly is absolutely associated with physiological changes, there are scientific explanations regarding the elderly. Several theories have been developed to explain elderly. Many scientists have given a scientific explanation about aging process and have developed theories to explain the elderly from different points of view. It is important to know these theories to understand aging. Many of these theories are interlinked. In the same way, biological processes of the body, cell and organ and the many socio-cultural factors influence the elderly process. It is clear that the biological or physiological and socio-cultural perspectives influence the aging process. This article describes some of the most widely accepted and major physiological or biological, sociological, and psychological theories of aging. It is expected that it will help to understand the different dimensions of the elderly.

## Sources of Data

This article has been written on the basis of secondary information. Secondary sources like relevant books, published articles, research reports, journals, web materials have been consulted in this regard.

## Different Theories of Aging

The theories of aging have been divided into three broad categories. These are; (i) biological or physiological theories of elderly, (ii) sociological theories of elderly and (ii) psychological theories of elderly.

## 1. Biological or Physiological Theories of Aging

Elderly is associated with physiological changes. There are no specific indicators for the beginning of the processes of aging. They vary from individual to individual and progress at different rates according to their organs, parts and body systems. There are many physiological theories that have developed behind the reasons of being elderly. Major theories under this heading are discussed below.

### 1.1. The Wear and Tear Theory

Dr. August Weismann, a German biologist, first introduced the "wear and tear" theory in 1882 (Harris, 1990:128). He believed that the body and its cells were damaged by over use and abuse. The organs, liver, stomach, kidneys, skin and so on are worn down by toxins in our diet and in the environment; by the excessive consumption of fat, sugar, caffeine, alcohol and nicotine; by the ultra-violet rays of the sun and by many other physical and emotional stresses to which we subject our bodies. Wear and tear is not confined to organs only but it also takes place on the cellular level. Of course even if someone never touched a cigarette or had a glass of wine, stayed out of the sun and eaten only natural foods, simply using the organs that nature endowed him/her are going to wear them out. Likewise as the body ages it also impacts on our cells and life styles. When we are young the body's own maintenance and repair systems keep compensating for the effects of both normal and excessive wear and tear. With age the body loses its ability to repair damage caused by diet, environmental toxins, bacteria or a virus. Thus many elderly people die from diseases that they could have resisted when they were younger. By the same token nutritional supplements and other treatments can help to reverse the aging process by stimulating the body's own ability to repair and maintain its organs and cells (Checkoway, 1994:75). This theory has described aging as an obvious process. So there is nothing to do with aging. However, it also indicates that we can take measures, which may help in delaying the starts of the process or minimize the complications, of old age.

### 1.2. The Neuroendocrine Theory

This theory was developed by Professor Vladimir Dilman, Ph.D and Ward Dean. It elaborates the wear and tear theory by focusing on the neuroendocrine system. This system is a complicated network of biochemical's that govern the release of our hormones and other vital bodily elements. When we are young, our hormones work together to regulate many bodily functions, including our responses to heat and cold, our life experiences and our sexual activity. Different organs release various hormones all under the governance of the hypothalamus, a walnut-sized gland located within the brain. The hypothalamus sets off various chain reactions whereby an organ releases a hormone, which in turn stimulates bodily response (Andrews, 1987:24-32). The hypothalamus responds to the body's hormone levels as its guide to regulating hormonal activity. When we're young hormone levels tend to be high, accounting for among other things, menstruation in women and high libido (Latin word means whim, caprice). It is instinctual energies and desire derived from the id. Another meaning of libido is psychic desire and energy especially that associated with strong sexual desire in both sexes. The drop in production of any one hormone is likely to have a feedback effect on the whole mechanism, signaling other organs to release lower levels of other hormones which will cause other body parts to release lower levels of yet other hormones. Thus hormone replacement therapy, a frequent component of any anti-aging treatment, helps to reset the body's hormonal clock and it can reverse or delay the effects of aging. If our hormones are being produced at youthful levels in a very real sense the cells of our bodies are stimulated to be metabolically active and thus we stay young (Beregi and Klinger, 1989:195).

### 1.3. The Genetic Control Theory

An important aging theory is the Genetic Control Theory. Don Kleinsek is the proponent of this theory. Some scientists regard this as a Planned Obsolescence Theory because it focuses upon the encoded programming within our DNA. Our DNA is the blueprint of individual life obtained from our parents. It means we are born with a unique code and a predetermined tendency to certain types of physical and mental functioning that regulates the rate at which we age and how long we live. To use a macabre analogy it's as though each of us comes into the world as a machine that is pre programmed to self-destruct. Each of us has a biological clock ticking away set to go off at a particular time, give or take a few years. When that clock goes off it signals our bodies first to age and then to die (Cates, 1993:271-276). In this way, men are being aged and then die.

### 1.4. The Free Radical Theory

Dr. Denham Harman of the University of Nebraska at Germany developed this now very famous theory of aging in 1956 (Harris, 1990:272). The term free radical describes any molecule that has a free electron, and this property makes it react with healthy molecules in a destructive way. Because the free radical molecule has extra electrons it creates an extra negative charge. This unbalanced energy makes the free radical bind itself to another balanced molecule as it tries to steal electrons. In so doing, the balanced molecule becomes unbalanced and thus a free radical itself. It is known that diet, lifestyle, drugs (e.g. tobacco and alcohol) and radiation etc., are all accelerators of free radical production within the body. However, there is also natural production of free radicals within the body. This is the result of the production of energy, particularly from the mitochondria which accelerates the ageing process.

### 1.5. The Waste Accumulation Theory

In the course of their life spans cells produce more waste than they can properly eliminate. This waste can include various toxins which when accumulated to a certain level, can interfere with normal cell function, ultimately killing the cell and gradually people become aged (Harries, 1990:128). Evidence supporting this theory is the presence of a waste product called lipofuscin leading to age pigment. The cells most commonly found to contain lipofuscin are nerve and heart muscle cells, both critical to life. Lipofuscin is formed by a complex reaction that binds fat in the cells to proteins. This waste accumulates in the cells as small granules and increases in size as a person ages. Because lipofuscin builds up over time it has been described as "the ashes of our dwindling metabolic fires" (Rahman, 2002:90).

### 1.6. The Hayflick Limit Theory

Another aging theory is Hayflick Limit Theory. Two British cell biologists Dr. Leonard Hayflick and Dr. Moorehead made one of the greatest contributions to cellular biology with this theory in 1962. According to the name of the discoverer Hayflick, it is called Hayflick theory. Hayflick theorized that the aging process was controlled by a biological clock contained within each living cell (Harris, 1988:85). The study concluded that human fibroblast cells (lung, skin, muscle, heart) have a limited life span. They divided approximately 50 times over a period of years and then suddenly stopped. Nutrition seemed to have an effect on the rate of cell division: overfed cells made up to 50 divisions in a year, while underfed cells took up to

three times as long as normal cells to make divisions. Alterations and degenerations occurred within some cells before they reached their growth limit. The most evident changes took place in the cell organelles membranes and genetic material. This improper functioning of cells and loss of cells in organs and tissues may be responsible for the effects of aging.

### 1.7. The Cross-Linking Theory

The Cross-Linking Theory of Aging is also referred to as the Glycosylation Theory of Aging. Johan Bjorksten first published it in 1942 (Harris, 1988:27). He applied this theory to aging diseases such as sclerosis, a declining immune system and the most obvious example of cross-linking, loss of elasticity in the skin. In this theory it is the binding of glucose (simple sugars) to protein, (a process that occurs under the presence of oxygen) that causes various problems in our body. Once this binding has occurred the protein becomes impaired and is unable to perform as efficiently. Thus it contributes to aging.

### 1.8. Caloric Restriction Theory

Calorie restriction or energy restriction is a theory proposed by respected gerontologist, Dr. Roy Walford (Harris, 1988:27). After years of animal experiments and research on longevity, Dr. Walford has developed a high nutrient low-calorie diet demonstrating that "under nutrition with malnutrition" can dramatically retard the functional, if not the chronological aging process. An individual on this program would lose weight gradually until a point of metabolic efficiency was reached for maximum health and life span. Walford stresses the importance of not only the high-low diet but also moderate vitamin and mineral supplements coupled with regular exercise.

## 2. Sociological Theories of Elderly

Whatever the causes it is evident from the biological theories of aging that elderly is an unavoidable stage of human life. Because each child born in the world naturally goes to an elderly stage. There have been many scientific, socio-cultural explanations developed regarding the elderly process. But there are no specific indicators for the beginning of the processes of elderly. They vary within each individual's organs, parts, and body systems; from one individual to another, and they progress at different rates. In addition, physiological aging does not necessarily parallel economic, social, or psychological aging (Encyclopedia of Social Work, Volume-1, 1974:50). For example, in spite of being capable, a man may be considered "old" in the job market (for example in our country age limit of government service is 57 years; after this certain time a government service holder will be declared as old by the law). So it is clear that socio-cultural and economic aspects are influenced by the human aging process. On the basis of socio-cultural aspects, some sociological theories of aging have been developed. The major sociological theories are described in the following sections.

### 2.1. Modernization Theory

An important sociological theory of aging is modernization theory. It was propounded by Cowgill and Holmes (1972:34). They have portrayed a sense of abandonment of role of the elderly in the modern society in this theory. Cowgill and Holmes advocate that modern societies have less use of older persons than that in the pre-modern societies. According to them, the more you become older, the more you experience a sense of relative deprivation. The main theme of this theory is change in economy and its related effect on social values and practices. It was also described as a process that changed the society, from primarily agricultural to primarily an industrial economy (Rao, 2006:316). Modernization theory of aging suggests that the role and status of the elderly are inversely related to technological progress. Factors such as urbanization and social mobility tend to disperse families, and technological change tends to devalue the wisdom or life experience of elders, leading to loss of status and power (Cowgill and Holmes, 1972:34). In addition, factors like high rates of residential mobility, the rise of individualism, an increased number of older people, the establishment of new household formation by younger generations away from the extended household tends to reduce the power, status, and security of older people in modern societies. Some investigators have found that key elements of modernization were in fact broadly related to the declining status of older people in different societies (Ahmmed, 2006:33).

### 2.2. The Labeling Theory

The labeling theory of the aged, proposed by Bengston (1973:5), advocates elucidating the actions of the elderly individuals in the society. The basic tenets of this theory are based on the assumption that when an individual is given a label 'old', this label creates a significant impact on the way he/she is being treated and perceived by the society. In fact, this theory demonstrates a similar nature of symbolic perspective. As labeled individuals, the aged individuals become used to associate with new identities, positions and roles. Once labeled, it is difficult for him/her to change the label because all of his/her actions are interpreted in light of the new identity, positions and roles. Moreover, the action that does not confirm to the label will be abandoned and the action that confirms the new identity/positions/roles will be accentuated (Cox, 1984:48-50).

### 2.3. Disengagement Theory

The disengagement theory of aging originated from the functionalist school of sociology. Cumming E and Henry proposed this theory (1961:137)). Disengagement theory proclaims that the aged individuals must be disposed of from their respective roles in order for the proper functioning of the society. According to the proponents of this theory, disengagement is a gradual and an inevitable process (Crandall, 1980:48). Moreover, this theory confines the area of operation of the aged by restricting their scope for employment and commitments (Baum and Baum 1980:20). Disengagement theory would predict that older adults are vulnerable to depression when they cannot negotiate disengagement from demanding social activities in the face of reduced resources (Heidrich, 1993:327). Thus, disengagement theory is not convincingly supported by empirical evidence.

### 2.4. Activity Theory

Following the negative reaction against the disengagement theory, the activity theory has emerged from Havinghurts as the polar opposite of disengagement. He proposes that successful aging is associated with the maintenance of social activities (Havinghurst, 1963:103). Activity theory analyzes old age at a micro level perspective and suggests that lack of social

integration increases the risk of late life depression (Boyd, Mckiernan and Waller, 2000:152). The Activity theory of aging argues that the more active people are, the more likely they will be satisfied with life. Thus, social involvement and activity are considered as vehicles for successful and meaningful aging under the framework of this theory. Activity theory assumes that our perception of ourselves is reflected in the roles or activities in which we engage. It recognizes that most people in old age wish to continue to have the same needs and values. This theory argues that both the individual and society adapt to refixed or changed roles, power and resources to shift from one generation to another in an ordinary fashion (Ahmmed, 2006:31). According to this theory it may be said that if the old age does not reduce their usual working ability, there is no need to restrict older people from engaging in active life so that they can get rid of depression and loneliness.

**2.5. Continuity Theory**

Like the activity theory, the Continuity theory of aging, notes that people who grow older are inclined to maintain as much of the same habits, personalities and styles of living that they developed in earlier years. This theory suggests that an older person will experience life satisfaction if there is a match between the individual's current older age life style and activities of his/her adult and middle age (Ahmmed, 2006: 34). If physical or other circumstances such as retirement from paid employment occur then similar activities must be found for the individual to continue to lead a satisfactory older life. The theory believes that individuals must take initiatives to acquire similar roles and opportunities (Eyetsemitan, et. al, 2003).

**2.6. Life Course Theory**

Life course theories represent a genuinely sociological approach to what, at the level of surface description, is a rather individual phenomenon as represented by the aging and life course patterning of human individuals. Much of this theorizing occurred subsequent to the recognition that individual aging occurred concurrently with the occurrence of social change, providing impetus to efforts trying to separate aging from, cohort effects. Life course theories generally represent a set of three principles. First, the forms of aging and life course structures depend on the nature of the society in which individuals participate. Second, while social interaction is seen as having the greatest formative influence in the early part of life, such interaction retains crucial importance throughout the life course. Third, that social force exerts regular influences on individuals of all ages at any given point of time (Ward, 1984:19).

## 3. Psychological Theories of Elderly

Elderly people face numerous physical, psychological and social role changes that challenge their sense of self and capacity to live happily. Various psychological matters affect the life process of people. It has also psychological explanation. On the basis of psychological aspects, some theories have been developed. The psychological theories of aging are described in the following sections.

**3.1. Stress Theory of Aging**

Stress is one kind of mental pressure, which is created by physiological causes. These theories argue that excessive physiological activation has pathological consequences. Hence differences in neuroendocrine reactivity might influence patterns of aging. The focus of such theories is not on specific disease outcomes, but rather on the possibility that neuroendocrine reactivity might be related generally to increased risk of disease and disabilities. Stress mechanisms are thought to interact with age changes in the hypothalamic-pituitary-adrenal (HPA) axis, which is one of the body's two major regulatory systems for responding to stressors and maintaining internal homeostatic integrity (Finch and Seeman 1999: 81-97).

**3.2. Cognitive Development Theory**

A vital psychological aging theory is cognitive development theory, which is proposed by Brandtstadter and Renner (Brandtstadter and Renner 1990:58). In this theory, they argue that successful adaptation to the losses and declines associated with aging hinges on the interplay between two cognitive processes - assimilation and accommodation. Assimilation refers to strategies aimed at optimizing resources, or compensating for losses or declines in domains that are central to the individual's self-esteem and identity. When assimilation strategies become ineffective, accommodative processes become more important. Accommodation refers to cognitive strategies aimed at adjusting personal goals, standards and frames of self-evaluation to allow for changes in resources and functional capacities (e.g. altering performance standards, disengaging from barren goals, adjusting evaluative or comparative reference point) (Boyd, McKiernan and Waller 2000:153). They suggest that the function of assimilative and accommodative processes is to allow older adults to maintain personal continuity in the face of losses in the elderly (Rapkin and Fischer, 1992:138). According to this theory, it can be said that those elderly could be accommodative and assimilative in their late life; they could be free from anxiety and depression.

**3.3. Theory of Everyday Competence**

Theories of everyday competence seek to explain how an individual can function effectively on the tasks and within the situations posed by everyday experience. Such theories must incorporate underlying processes, such as the mechanics and pragmatics of cognitive functioning, as well as the physical and social contexts that constrain the individual's ability to function effectively. Three broad theoretical approaches to the study of competence have recently been advocated. The first perspective views everyday competence as a manifestation of latent constructs that can be related to models of basic cognition. The second approach conceptualizes everyday competence as involving domain-specific knowledge bases. In the third approach, the theoretical focus is upon the fit, or congruence and the environmental demands faced by the individual (Schaie and Willis, 1999:174). In this theory, it has been said that everyday competence of elderly increases as the cognitive process that permits everybody to develop adaptive behavior in specific everyday situations.

**3.4. Psycho-social Theory**

Another theory related to aging is psycho-social theory. Eminent psychologist Erikson proposes it. He proposes a series of development tasks, occurring at different stages across the lifespan. Within this theory, the process of life review results in either acceptance or rejection of the life one has lived.

Acceptance of the life lived is associated with a sense of coherence and wholeness in the face of disintegration, a less self centered view of life, a transcendent view of humankind, and an acceptance of death. The opposite state, rejection, is associated with shame, regret, guilt or disappointment of the life lived, a disgust at the self and others, and a fear of death. Erikson proposed that the state of rejection might, in severe cases; he associated with mental health problems, including depression (Boyd, McKiernan and Waller 2000:151). As a whole it can be said that those elderly who successfully accept or resolve the proposed task of old age, they could live or adjust to a situation in a better way.

## Conclusion

The above theories of aging have discussed various aspects of aged people. It is clear that no single theory could explain all aspects of the elderly. All theories are concerned with the human body system. A dominant theme in the literature on ageing is that late life is characterized by losses and declines in personal functioning (e.g. physical and cognitive abilities) and social networks (e.g. changes in social roles, death of friends and relatives (Brandtstadter, Rothermund K and Schmitz, 1997:107). Such losses and declines often provoke increased dependency on others, which in turn might result in perceived losses in control and autonomy. On the basis of this reality many scientists have formulated different theories to explain the ageing process. It is seen that the aging process is explained by different physiological, sociological and psychological theories. It is also clear that disengagement; modernization and labeling theory are found highly applicable for the social explanation of elderly.

## References


Ahmmed, Md. Faisal. 2006. "Aging Situation in Some Selected Tribal Communities in Bangladesh". Ph. D. thesis submitted to Institute of Social Welfare and Research, University of Dhaka, Bangladesh.

Andrews, GR. 1987. 'Ageing in Asia and the Pacific: A multidimensional cross-national study in four countries'. Comparative Gerontology, Vol-1.p. 24-32.

Baum, M. and Baum, R. C. 1980. Growing Old: A Social Perspective. New Jersey: Prentice-Hall, Inc.

Beregi, E. and Klinger, A.1989. Health and living conditions of centenarians in Hungary. International Psycho geriatrics, 1 (2): 195-200.

Boyd Jemma, McKiernan and Waller Glenn 2000. "Early-onset and Late-onset depression in older adults: psychological perspectives," in Boyd Jemma (eds.) Reviews in Clinical Gerontology Volume 10. Highfield: University of Southampton, UK. Pp. 153.

Brandtstadter J, Renner G. 1990. "Tenacious goal pursuit and flexible goal adjustment: Explication and age-related analysis of assimilative and accommodative strategies of coping," Psychol Aging Vol 5. New York. Pp. 52-80.

Brandtstadter J, Rothermund K, Schmitz U, 1997. Coping Resources in Later Life. Review of Eur. Psychol. Application Vol-47. Pp. 107-13.

Cates, N. 1993. 'Trends in Care and Services for elderly individuals in Denmark and Sweden', International Journal of Aging and Human Development, Vol-37, Number-4. p. 271-276.

Checkoway, B. 1994. Empowering the Elderly: Gerontological health promotion in Latin America. Aging and Society Vol-14.

Cowgill, D.O.and Holmes, L.D. 1972. Ageing and Modernization. New York: Appleton.

Cox, Harold. 1984. Later Life: The Realities of Aging. New Jersey: Prentice-Hall, Inc. P. 48-50.

Finch C E, Seeman T E. 1999. "Stress theories of aging," in Bengtson V L and Schaie K W (eds.), Handbook of Theories of Aging. New York: Springer. pp-81-97.

Harris, Diana K. 1988. Dictionary of Gerontology. New York: Greenwood Press, p. 58.

Havinghurst, RJ. 1963: Successful Aging. In Williams RH. Tibbitts C. Donahue W. eds Processes of aging, Volume 1. Atherton Press, New York. P. 103.

Heidrich SM, Ryff CD. 1993: Physical and Mental health in later life: the self-system as mediator, Psychological Aging Vol-8, New York. p. 327-38.

Rahman, Muhammad Habibur, 2002. Introduction to Social Gerontology: Sociology of Aging. Dhaka: Ashrafia Boighar, p. 89.

Rao, C. N. Shankar. 2006. Sociology Primary Principles, New Delhi: S. Chand & Company Limited

Rapkin BD, Fischer K. 1992. "Farming the Construct of Life Satisfaction in terms of Older Adults Personal Goals", Psychol Aging Vol 7. Pp. 138-49.

Schaie K W, Willis SL. 1999. Theories of Everyday Competence and Aging. In: Bengtson V L, Schaie K W (eds.) Handbook of Theories of Aging. Springer, New York, Pp. 174-195.

Ward, Russell A. 1984. The Aging Experience: An Introduction to Social Gerontology. New York: Herper & Row, p. 19.

**International Association for Gerontology and Geriatrics**

**Preliminary meeting on**

**"Is there a place for IAGG in the Middle East?"**

**Saturday, September 22, 2012**
**Hamad Medical City Club House**
**Doha, Qatar**

## Minutes

**Chair**
Bruno Vellas, MD, PhD, Toulouse, France
Jean-Pierre Michel, MD, PhD, Geneva, Switzerland
Tawfik A. M. Khoja MBBS, DPHC, FRCGP, FFPH, FRCP (UK), Riyadh, Saudi Arabia

**Attendees**
Fawzi A. Amin, MBBch, MPH, PhD, Bahrain
Hala S. Sweed, MD, Cairo, Egypt
Palmi V. Jonsson, MD, FACP, FRCP L, Reykjavik, Iceland
Giovanni Gambassi, MD, Rome, Italy
Daniel Beard, Malakoff, France
Abeer Khaled Al-Baho, MD, Kuwait
Abdulrazak Abyad, MD, MPH, MBA, AGSF , AFCHSE, Tripoli, Lebanon
Elie Stephan, MD, Beirut, Lebanon
Ebtisam Elghblawi, MBBCh, MScRes, ADD, DRH, Tripoli, Libya
Miel W. Ribbe, MD, PhD, Amsterdam, The Netherlands
Nasir Mahmood, BSc, MBBS, MPH, Chakwal, Pakistan
Akram A.O. Amro, MPH, Jerusalem, Palestine
Marwan Ramadan, RACP, AGSF, ABIM, ABEM, Doha, Qatar
Essa Mubarak Al-Sulaiti, Doha, Qatar
Hashim Hasan Balubaid, MB, ChB.SSC-MED, Riyadh, Saudi Arabia
BahseerM; Al-Sufyani, MD, MPH, Riyadh, Saudi Arabia
Salwa Abdulla Alsuwaidi, Dubai, United Arab Emirates
Omar Hussein Fayed Mujalli, Sanaa, Yemen

**Welcome**
Bruno Vellas,MD, PhD, IAGG President
Brief presentation of the IAGG. The Society was created in 1950. It is present in 70 countries and currently has five Chapters (Africa, North America, Asia & Oceania, Latin America & Caribbean, Europe) with around 50,000 members. It is important that the Middle East also be represented in the Society. For this initiative to be a success, it is necessary to for all to work together.

## Introduction

Tawfik A. M. Khoja MBBS, DPHC, FRCGP, FFPH, FRCP (UK)
Director General - Executive Board of the Health Ministers' Council for GCC

Care of the elderly is an important concern in the Gulf Cooperation Council (GCC - United Arab Emirates, Bahrain, Saudi Arabia, Oman, Qatar and Kuwait) countries and is part and parcel of Muslim culture and faith. The first Gulf Symposium for diseases of the elderly and care of the aged was organized in 1994 in Riyadh, following which a series of recommendations were made to all member States:

1. Introduction of geriatrics and health care of the elderly in the curricula of medical colleges and health institutions.
**2.** The importance of introducing a separate department for health care of the elderly at the central level in the ministries of health and in the directorates of health, as well as establishing elderly care units in the main hospitals.
**3.** Incorporation of health care of the elderly with the elements of primary health care.
**4.** Establishing a multipurpose program to plan preventive health services for the elderly in each member state.
**5.** Encouraging home care of the elderly rather than isolating them in hospitals unless this is urgently required.
**6.** Equipping certain establishments and facilities for specific groups of elderly persons who need specialized services whether indoor or outdoor.
**7.** Encouraging and supporting health research in the various fields and urging individuals and donor societies to contribute in sponsoring and financing such research.

The second Gulf Symposium was held in Abu Dhabi in November 1997. The ensuing recommendations were validated by the Executive Body with particular emphasis on:

• developing geriatric health services in the member States

• strengthening the departments and divisions of geriatrics in the Ministries of Health and main hospitals

• planning preventive and rehabilitative programs for the elderly and incorporation of such services within primary health care

• giving effect to the role of education about diseases of the elderly

• encouraging voluntary work to assist elderly people utilizing international experience in this field.

This was followed by a number of meetings and resolutions, culminating in the adoption of the Riyadh Charter on Elderly Care in March 2009 which highlighted the respective roles of government bodies (Ministries of Health, Ministries of Labor and Social Affairs), lawmakers, the media, and of the family and community in taking care of the elderly.

This was further reinforced by the Tripoli Declaration on Older People in November 2009. This highlighted the need for national coordination to formulate healthcare policy for the elderly; accurate data to establish evidence-based care; the establishment of interdisciplinary networks; the development of human resources; the improvement of primary healthcare to fulfill the healthcare needs of the elderly; the development of support for self care; raising public awareness; and providing adequate social and home care, among others.

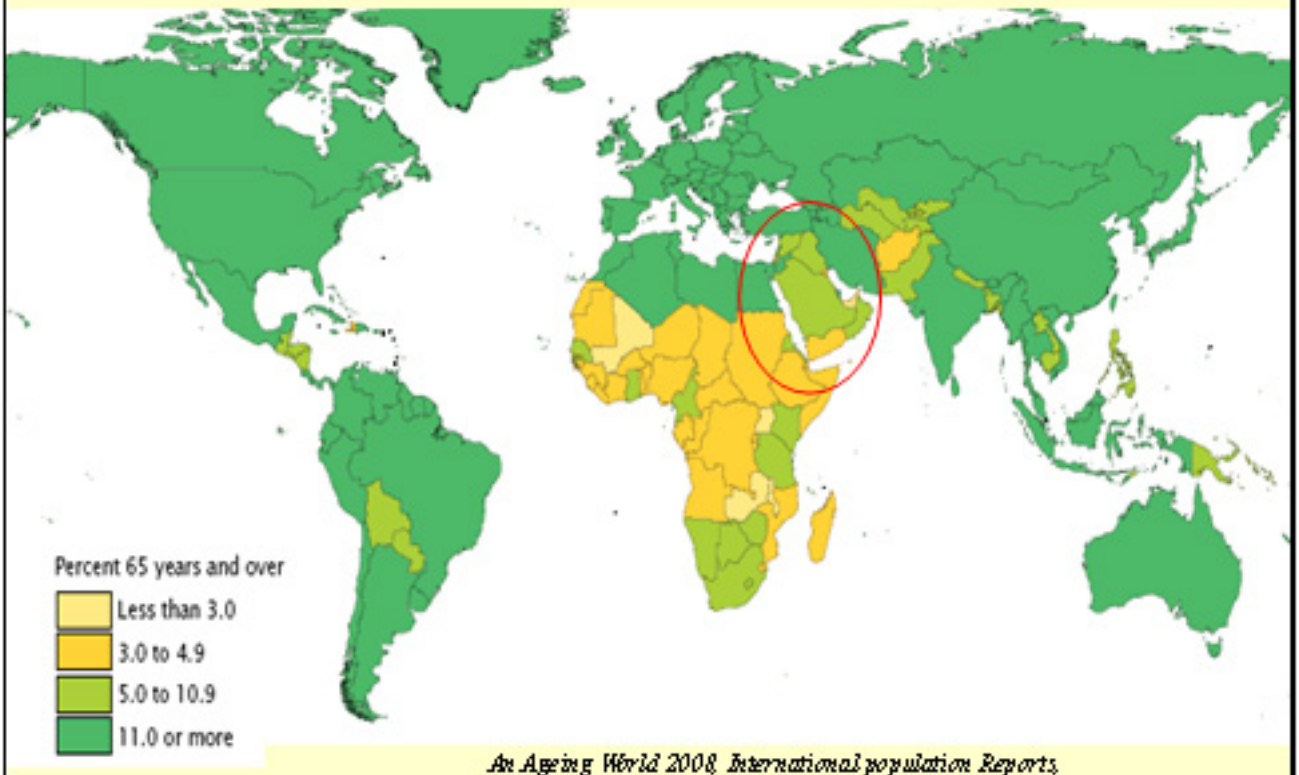
**Current Situation of Elderly Care in the GCC** (see Appendix 1)

***Is there a place for IAGG in the Middle East?***

Prof. Jean-Pierre Michel, MD, PhD, Honorary Professor of Medicine, Geneva University, Switzerland; EUGMS President; Co-founder of the MEAMA; IAGG Ambassador for the ME

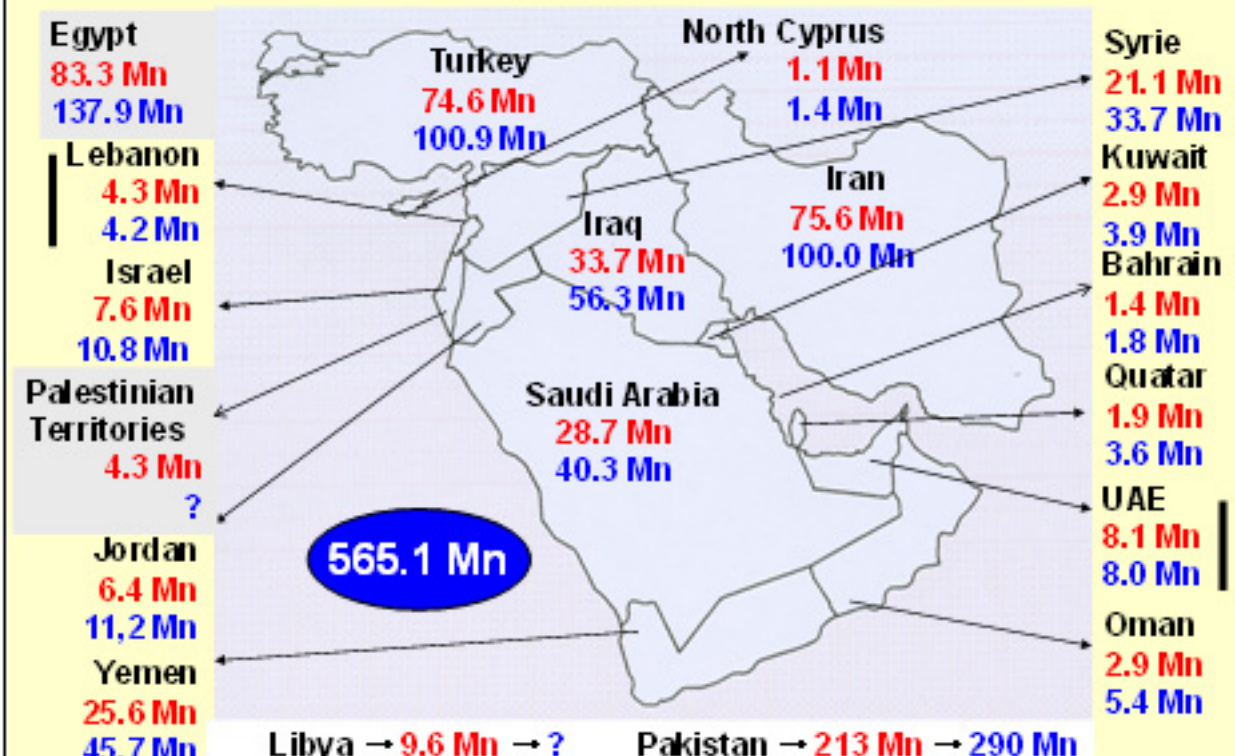
Currently less than 5% of the population in the Middle East is aged 65 and over. However, this situation will change dramatically in the coming years. By 2040, this percentage will approximately double. As shown by the image below (population estimates for the region 2010 in red the population for countries in the Greater Middle East will reach 565 million by 2050 with another 300 million in Libya and Pakistan. What is evident from age pyramids is that the population in the Middle East is aging faster than it is growing. Hence, the question of elderly care in the region will become more and more important.

## Percent POPULATION aged 65 and over: 2040




*An Ageing World 2008. International population Reports. US department of Health and Human Services, June 2009*

## Total population in the «MIDDLE EAST» COUNTRIES 2050




*United Nations, department of Economy and Social Affairs – World population prospects – 2012 estimates*

**MEAMA Activities**
Abdul Abyad, MD, MPH, MBA, AGSF, AFCHSE, Lebanon
There are various initiatives to train healthcare workers and to develop services to care for the elderly across the region. Currently, comprehensive teams are lacking. This is all the more of concern given that the elderly population is increasing, as life expectancy increases and fertility rates decrease. However, there are no sufficient statistics on the situation.

The Middle East Academy for Medicine of Ageing (MEAMA) was founded in 2002 to stimulate the development of healthcare services for older people in the region. It was established by a number of professors and teachers from the Middle East and Europe. The Model of MEAMA was taken from the European Academy for Medicine of Ageing (EAMA). The mission of MEAMA is to create a hub for education and training in the field of ageing in the Middle East. Its strategic tools include education and training, human resource development, the creation of a network of universities and educational organizations, and research and publication in the field of aging.

To further education on aging, it organizes post-graduate courses consisting of four 4-day sessions directed towards physicians, nurses, social workers, healthcare officers and others responsible for healthcare for the elderly. Three courses have already been held and the fourth is currently underway.

In order to support activities in the field of aging and Alzheimer's disease, the Middle East Association on Ageing and Alzheimer's (MEAAA) was established and participates in conferences on a regional level and publishes peer-reviewed journals. MEAMA also collaborates in the InterRAI initiative.

**Roles and activities of the IAGG**
Bruno Vellas, MD, PhD, Toulouse, France

The goals of the IAGG are:
• to promote the highest levels of achievement in gerontological research & training worldwide;
• to promote gerontological interests globally & on behalf of its member associations;
• and to promote the highest quality of life & wellbeing for all people as they experience aging at individual & societal levels.

It is made up of more than 50,000 professionals representing 64 countries and 71 national associations.

One of the initiatives of the IAGG to foster and enhance gerontology and geriatrics worldwide is to organize high-level workshops every year with the WHO, to provide recommendations to guide all actors concerned by the development of older populations. To this end, the IAGG has obtained Consultative Status within the United Nations.

Other initiatives include the creation of an IAGG/WHO Global Aging Research Network (GARN) to bring together 500 international centers of expertise and the IAGG World Aging Academy.
It should be stressed that the goal of the IAGG is scientific not political.

For the ME countries present to become part of the IAGG, each country should provide a description of how gerontology is organized in the country and a list of between 30 and 50 members from all aspects of elderly care (physician and non-physician). Applications by ME countries will be fast-tracked. The formal application should be prepared for validation during the IAGG General Assembly, in Seoul, Korea, in June 2013.

Establishment of a chapter implies the organization of a regional meeting every 2 to 4 years. (The ME Chapter would also be a candidate for the 2021 global meeting and would have to engage in lobbying to host this meeting.)

## COUNTRY PROFILES

### BAHRAIN
***Fawzi A. Amin MBBch, MPH, PhD, Consultant Family Physician, Arabian Gulf University, Manama, Bahrain***

Currently there are around 33,000 persons aged over 65 in Bahrain (5%?). By 2050, this proportion will reach 25%.

There is a good primary healthcare setup that has a holistic approach: screening and prevention in early life should be beneficial in later life. The country is divided into four regions with 25 health centers all connected via a common database. The goal is that patient data be shared between the primary care center and the hub.

The population in Bahrain is approximately 1 million. On average, patients make four primary health care visits per year (which affords an excellent opportunity to perform screening initiatives). Only 2% are then referred to specialist care in hospitals. Such early screening allows for early treatment and potentially to slow disease progression and improve quality of life.

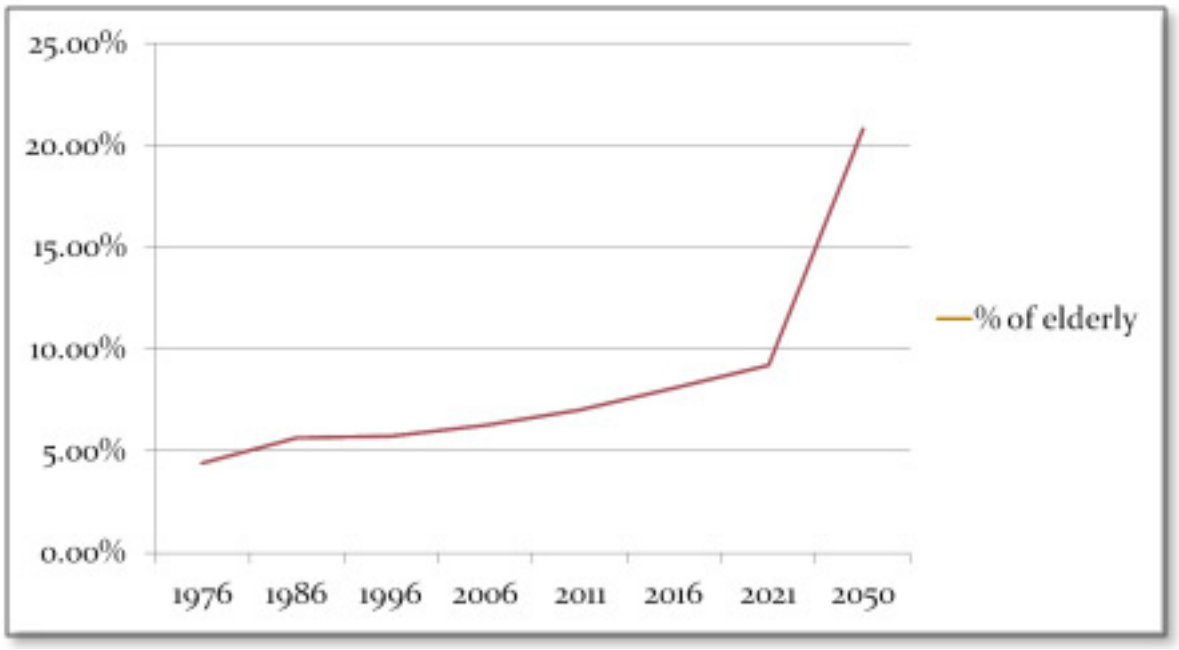
Importance is being given to the creation of day centers for the elderly, which organize social visits, intergenerational activities and rehabilitation.

Permanent care comes under Ministry of Health. A priority for the Ministry of Health is helping families to care for aged relatives via training and support of home caregivers. Various initiatives in collaboration with the WHO include the preparation of a guideline manual for health care workers, conferences on elderly health (including discussions with lawyers on elderly rights).

**EGYPT**

***Hala Samir Sweed, MBBCh, MSC, PhD, MD, Associate Professor of Geriatric Medicine, Geriatrics and Gerontology Department, Ain Shams University, Cairo, Egypt***

Healthcare of the elderly will become an urgent issue in Egypt in the years to come. By 2050, over 60s will represent 20.8% of the population (around 20 million persons).




This will generate huge challenges since only 53% receive state pensions. 82% of women over 70 years of age are widows, and hence have limited financial resources.

To ease this burden, the government has adopted certain measures including additional financial support for females not supported by husbands or sons, privileges (free public transport, reductions for theatre tickets, etc.), and social training programs.

Despite the setting up in 1997 of a Higher Committee of Geriatric Care, there is still a dire need for geriatric structures. There are currently only 161 geriatric homes and 173 clubs covering around 35000 persons.

Under the auspices of the Ministry of Health, a Geriatrics and Gerontology Department was set up at the Ain Shams University in 1982. Some university hospitals have geriatric wards (Menoufia, Mansoura and Alexandria Universities) and psycho-geriatrics units exist in the Ain Shams and Cairo University Hospitals. Since 2006, more than 10 two-floor healthcare centers (with cardiology, neurology capabilities, etc.) have been set up. Military hospitals also provide elderly care, and NGOs and the private sector also play a role. Media channels and newspapers have programs and pages specifically for the elderly.

Ongoing training programs have been initiated in geriatrics and gerontology; however, more needs to be done, including the passing of appropriate legislation and better coordination.

**KUWAIT**

***Abeer Khaled Al Baho, MD, Kuwait, Director Health Promotion Department; Consultant Family Physician, Kuwait***

Kuwait has a population just under 3.5 million. The total number of elderly persons over 65 years was 26,570 according to statistics in December 2003. This represented 1.6% of the total Kuwaiti population. By 2011, this number had increased to 39,060 or 3.4% of the same population.

Kuwait has one of the highest life expectancies in the world (male, 78.7; female, 79.4). Health care costs doubled to 800 M dinars (2200 M Euros) between 2006 and 2010.

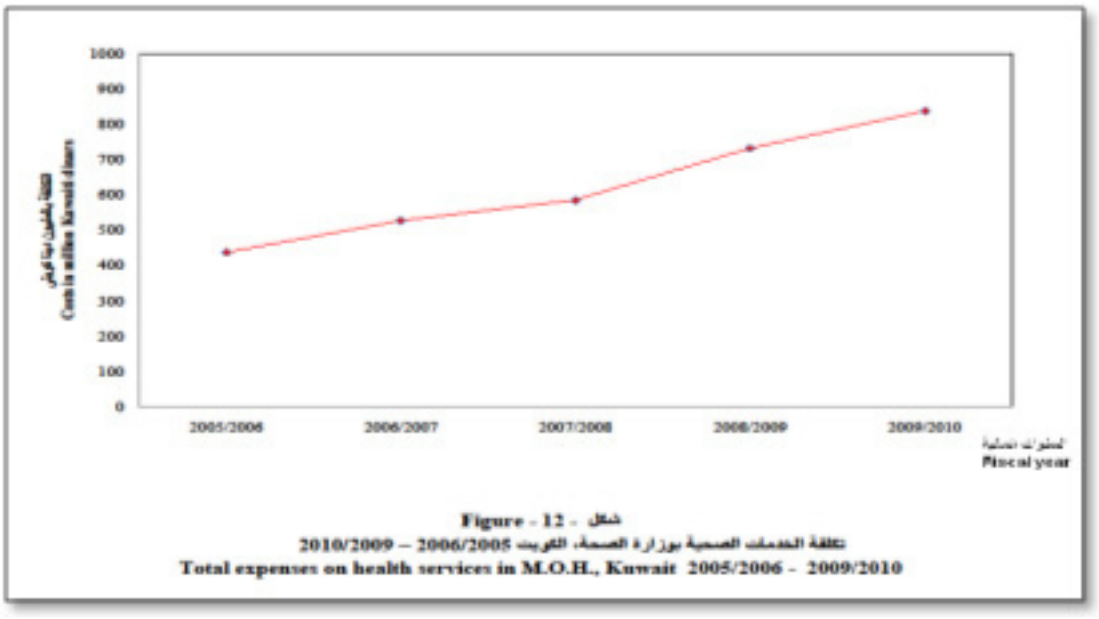



Figure - 12 - شكل
2010/2009 – 2006/2005 :تكلفة الخدمات الصحية بوزارة الصحة، الكويت
Total expenses on health services in M.O.H., Kuwait 2005/2006 - 2009/2010

Responsibility for the elderly in Kuwait is divided between the Ministry of Health, the Ministry of Social Affairs, NGOs, care givers and families. Geriatric care clinics have been established all over the country (one clinic per health area) with unified protocol for on-the-spot screening. Mobile geriatric care units take care of those who are bed-ridden and cannot move.

National geriatric care program, headed by Minister of Health has been set up to stratify the elderly population according to their health status.

Health promotion aims to increase the awareness and knowledge of patients, their relatives and the community about how to keep the elderly healthy. Health campaigns have emphasized World Health Day 2012 recommendations focusing on geriatrics.

**LEBANON**

***Elie Stephan, MD, Geriatric Medicine, Head Acute Care Unit for Elderly, and Geriatric Program, St George Hospital, Balamand University, Beirut, Lebanon***

At present, the Government is absent from health care and this is assumed only by NGOs and private initiatives.

35% of the elderly continue to work after the age of 64 due to their financial need. 45% of old women are widows compared to only 9% of men. This represents a big problem where widowed women lose income and health care coverage.

The first in the Alzheimer's disease Association in the Middle East was founded in Lebanon, which is very active, especially the scientific committee which presents monthly lectures to caregivers. One pan-Arab congress was organized in 2005. A building program throughout Lebanon was set up in 2011 in collaboration with the Ministry of Social Affairs, which is still ongoing.

Among a population of around 4.6 million, around 285,700 (8%) are elderly. Less than 1.4% of the total number of seniors in Lebanon live in long-term care settings; the rest (98.6%) live in their homes. This is just as well since there are only 49 institutions with 4000 beds in the country. Only 18% of these institutions are supervised by a geriatrician.

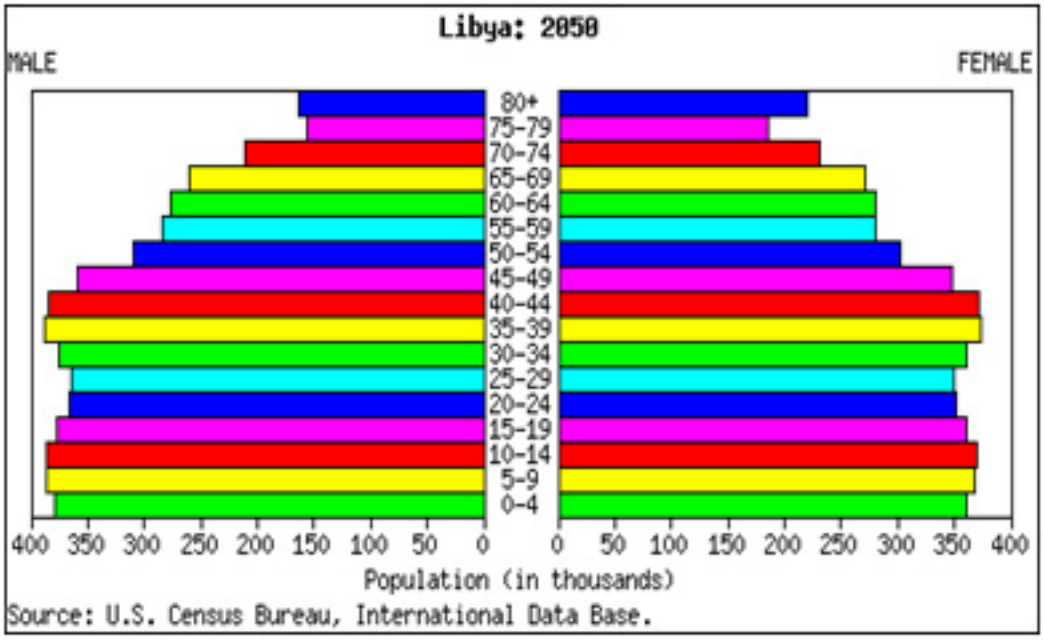
In addition to these nursing homes and rehabilitation centers, there is a respiratory palliative care unit (10 beds) and an Alzheimer's unit. Within the hospital system, there are highly advanced rehab units in two hospitals (Behannes and Cortbaoui Hospitals), as well as ACE Units in the Aiin-Wa-Zein Hospital and the St George Hospital-Balamand University, in Beyrouth.

Since late 1990s, an obligatory course on Geriatrics & Gerontology has been progressively introduced in all nursing, occupational therapy, and physical therapy schools. This includes 15 to 30 hours of courses with a structured training session in a nursing home. Courses on Geriatrics & Gerontology are also now taught at the Balamand and St Joseph Universities.

**LIBYA**

***Ebtisam Elghblawi, MBBCh, MScRes, ADD, DRH, Tripoli, Libya***

Libyan society remains youth dominated; however the size of the ageing population is increasing. The population was estimated in July 2012 to be 6,733,620 of which 4.6% were over 65 years of age. The fertility rate dropped to 2.9 children per mother in 2011, compared to 5.2 in 1990. The median age is now 24 years and rising. With an increased life expectancy, Libya remains a country with a high rate for births compared to deaths (7:1).




Health expenditure in Libya is low compared to other countries at 6.6% of GDP in 2009. Challenges related to aging include a shortage of geriatricians, or physicians trained in geriatrics; curricula of basic and graduate level education lacks aging content; gradates of nursing schools are undertrained and poorly qualified; there is no training in the care of the elderly, and many do not find working with them to be rewarding; health services are poor and expectations unmet; there are no services for the elderly with special needs (age-related disability benefits) and no proper social welfare services; the burden of geriatrics syndromes is high; and accurate is lacking. Furthermore, there are no geriatric wards in hospitals. There are currently only four geriatric centers in the country, offering a free service and funded by the government and donations.

In order to ensure better aging, the following are required: specialized clinics at the level of primary care health centers; trained nurses and specialist doctors; specific geriatric training for clinicians, educators and students; and protocols for geriatric follow-up care.

**PAKISTAN**

***Nasir Mahmood, BSc, MBBS, MPH, National Coordinator, Health of the Elderly, Chakwal District, Pakistan***

The population in Pakistan was 149.8 million in 2007. Based on current birth and death rates, and life expectancy (63 years), it is expected that the population will double in 25 years. By 2025, there will be around 27 million persons aged 60 and above. The majority of elderly persons live with their extended families.

There are no special health programs for the elderly in Pakistan. The limited income of the elderly makes access to healthcare and medications complicated. Those who were formerly employed have pensions, but those who were unemployed must resort to their personal savings or charitable institutions. There is a long wait to see a doctor.

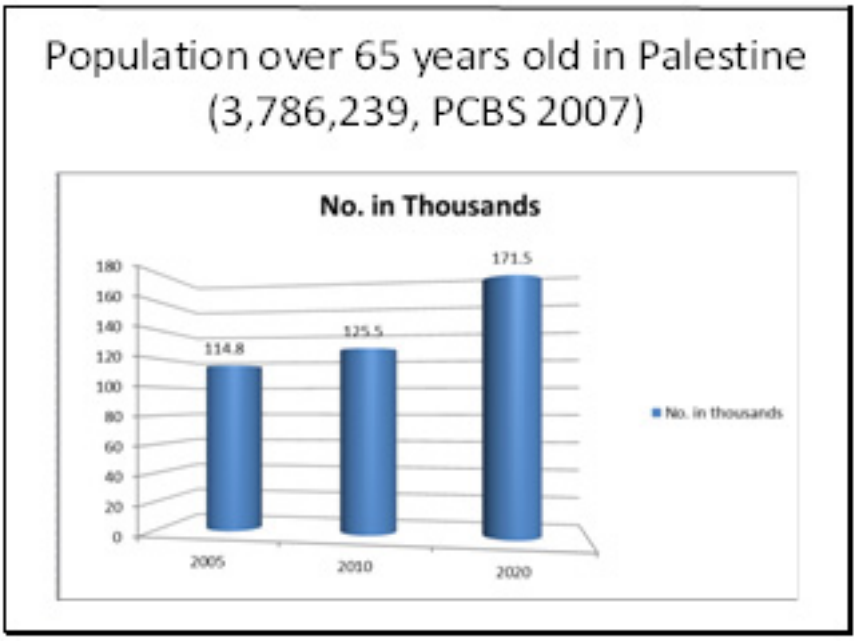
Elderly welfare was adopted into the National Health Policy in 1997 and in 2001, the president formed a National Task Force to look into the issues of the elderly in Pakistan. Various measures to increase awareness of elderly healthcare and provide specific training have met with good success including workshops for managers, clinicians, nurses, medical students, politicians and media, and others for healthcare professionals, and publications such as the INTRA Research Project 2005.

Four pillars of plan of action for the elderly of Pakistan include:
Evidence-based policy and strategy formulation;
- Development of human resources for quality health care;
- Primacy health care as the corner stone of active ageing;
- Creation of multidisciplinary networks to facilitate care of elderly.

**PALESTINE**

***Akram A.O. Amro, MPH, Jerusalem, Palestine***

The elderly percentage of the total population is 3.1% in the Palestinian territory, 3.3% in the West Bank compared with 2.6% in the Gaza Strip. The prevalence is higher among females than among males, being 3.5% and 2.6% respectively. The percentage of elderly people is not expected to increase dramatically due to the high fertility rate, especially in Gaza, and should reach around 171,500 by 2020.




In 2010, the proportion of elderly persons suffering from chronic disease was 70.5%. According to 2003 statistics, 42.1% of the elderly live under the poverty line, representing about 4.9% of all poor people in the Palestinian Territory, with significant variation between the West Bank and Gaza strip, where it reached 38.4% and 50.1% respectively.

Elderly citizens (65+ years of age) are among the most vulnerable groups of the Palestinian population and among the least assisted by the government. All programs and initiatives focus on infants and youths. Only 54% of the elderly in the West Bank are covered by health insurance. No real social welfare system exists and support is from the family not the State. The PNA Ministry of Social Affairs gives senior citizens a monthly stipend of 90 NIS (approximately €17/21$). This amount is not enough even to cover a small part of their daily expenses and needs, medications or health insurance.

Many elderly also face the daily difficulty of loneliness due the death of family members or spouses and the lack of loved ones living nearby. This issue has been exacerbated with the ongoing emigration of the young from Palestine.

There is a need to set up programs that focus on improving the quality of life of the elderly through a well integrated program that addresses their social, medical, physical and emotional needs.

**QATAR**

***Marwan Ramadan, RACP, AGSF, ABIM, ABEM, Senior Consultant, Geriatrics, Doha, Qatar***

Primary healthcare centers and the Hamad Corporation do not come under the authority of the Ministry of Health. Primary HCPs see most of the elderly patients and a home care service will start soon. In 1990 , the Hamad Corporation established the first geriatric unit, which has experienced an explosion in the number of elderly patients (700 px).

In 1996, the MOH decided to introduce a home care program in the Hamad Corporation. Currently, 750 patients are enrolled in this program.

There are no nursing homes per se as this is not allowed for religious reasons. Neither are there any day care centers (these existed 20 years ago but not today); however, these will be redeveloped.

Support of the Government for the elderly is strong (pensions, free medical assistance and equipment at home). The thinking is that the place of the elderly is in their home, not in a hospital, but society is changing and nursing homes will be needed.

Care of severely demented persons is assumed by the family with help from helpers who are provided appropriate training.

The Supreme Council in 2000 has appointed a committee to prepare a strategy for elderly care for the next 20 years. Much has been done and many decisions made, but implementation is slow.

**DUBAI (UNITED ARAB EMIRATES)**

***Salwa Abdulla Alsuwaidi, MBBS, Dip.Ger., MRCP (UK), Director of the Community Centre for Elderly (CCFE), Dubai Health Authority, Arab Board Internal Medicine***

UAE like all other GCC countries has a relatively “young” population. In 2007, the percentage of young people (less than 14 yrs) was 45%, and the percentage of elderly (above 60 yrs) was 5% among locals, and 1.7% among expatriates. The latest official

census in 2005 showed that the total number of local elderly people in the UAE was 64, 278, distributed among 7 Emirates. This was 2.5 times the number counted in 1995. This is primarily because of the spectacular increase in life expectancy since the 1960s, which is now the highest in the Middle East.

Healthcare services for the elderly consist of two main forms: long-stay care that is provided in nursing homes and acute care that is provided in hospitals. However, only one hospital has a specialized geriatric unit under the department of internal medicine. Primary Health Care (PHC) centers scattered across the UAE, GPs and family physicians provide medical care to elderly patients. Some PHCs do offer Geriatric Clinics on weekly bases run by geriatricians.

There are two types of elderly homes providing social and medical services in the UAE; the first belong to the Federal Government, and the second to the Local Government of each Emirate.

In May 2011, the Community Development Authority (CDA) in Dubai launched a program to foster, protect and develop Dubai's elderly population by offering services, programs and the necessary care inside their own homes.

Challenges to elderly health services in the UAE include a high numbers of "bed blockers" in the main acute care hospitals, a lack of rehabilitation services (transitional care), slowly developing geriatric services, a lack of local geriatricians, an underdeveloped community service model, and unequal service delivery among the 7 Emirates.

**YEMEN**

***Omar Hussein Fayed Mujalli, Sanaa, Yemen***

The current situation is weak due to the economic and political situation. Health care for chronic disease patients is free. Currently there are 4 centers for the elderly in the capital and one nursing home with a capacity of 75 persons.

Challenges include a lack of political support, no specialists, weakness of providing care for all persons, and a lack of communication between various ministries.

Program needs to be set up with a national plan to provide support for elderly health care. It is important to benefit from the experience of other countries.

Awareness needs to be increased via congresses and workshops in the country.

## GENERAL COMMENTS

**Tawfik A. M. Khoja**

Two or three persons should be appointed to represent the group in Seoul.
The person who leads the group should to be experienced, involved in leadership, post-graduate training, CME and be able to obtain political commitment (support from the Government, and not just the MOH).

**Fawzi A. Amin**

Each country should think about preparing a poster on the country profile for the Seoul Congress in 2013 (in addition to one on the region).

**Bruno Vellas**

Countries should apply for Center of Excellence status using the IAGG application form as a model.

**Jean-Pierre Michel**

Exhibition space should be reserved for the region in Seoul.

Countries should provide within 2 months a list of persons working in the country in geriatric care (for fast-track approval) with a designated leader. Then in Seoul a leader can be designated. IAGG has nothing to say with regard to the choice of leader. "We are not politicians. You will decide who best can represent the group."

**Tawfik A. M. Khoja**

Countries should meet again to nominate a coordinator for the group.

**Jean-Pierre Michel**

Maybe it would also be good to meet to discuss EBM guidelines.

**Miel Ribbe**

Countries should strive to use the same validated screening instruments so that comparisons can be made between countries in the region.

## CONCLUDING COMMENTS

**Bruno Vellas**

The strengths and weaknesses in each country have been seen. It is clear that the IAGG can have a greater influence in the world.

Three categories of the elderly are important for geriatric medicine: the robust; disabled; and the prefrail and frail). Identification of the prefrail and frail needs to be implemented in clinical practice.
Work is also being undertaken with GPs to prepare a screening tool to identify the frail (i.e. those who have already lost 2 activities of daily living). Successful interventions are available in this population.

There is Governmental support in France to move geriatric medicine in this direction. Even if the size of existing centers to treat the elderly was doubled, they would be full in 5 years. Hence the great need to treat frailty. In Toulouse, for example, a new day hospital is being built to see frail patients. This new center will be in the city center as frail patients are often frightened to travel to university hospitals outside the city.

Press articles have been published to inform the population on frailty in the Southwest of France and this campaign that will be done nationwide, along the same lines as those done in cancer.

Patients are open to this since they agree that they are becoming frail and need assistance to avoid becoming disabled.

More research is needed in each field: in nursing homes for example to identify the early stages of the disease. Early identification will open the way for new treatment strategies. There is thus a need for greater collaboration with GPs.

Toulouse also has an important research center to work on the clinical development of new drugs. Patients come to the center because they know that it participates in drug trials. Participate in trials is important for a center. Being certified as an IAGG Center of Excellence can open the way to receiving additional help from the government. Protocols for participation in trials are available on http://garn-network.org/

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(Appendix 1: pages 27 and 28)

| Item | UAE | Bh | KSA | Om | Qa | Kw | Ym |
|---|---|---|---|---|---|---|---|
| Is there a department /division in the MOH for elderly care? | - | Committee | No | Yes | Yes | No* | Yes |
| Is there a department / division in the directorates of health affairs for elderly care ? | Workteam | No | No | No | No | ** | Yes |
| Is "Health for elderly" integrated within the PHC elements? | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Are there institutions for training – working medical carers in the health centers on elderly care? | No | No | No | No | Yes | No | No |
| Are Elderly care programmes included in the curricula of health colleges and institutes as well as post-graduate studies? | - | Yes | to some extent | No | Yes | - | No |
| Are there departments for elderly care/geriatric in colleges of medicine? | No | No | to some extent | No | - | - | No |
| Is there a national committee for elderly care? | No | Yes | Yes | No | Yes | No | under establish |
| Are there community studies / research on elderly? | - | Yes *** | Yes | Yes | Yes | Yes | limited |
| Hold educational/training activities (workshops, symposia, conferences...) in the filed of Geriatrics | Yes | Yes | Yes | Yes | Yes | Yes | in 2008 plan |
| Are there societies for care of the elderly? | - | Yes | Yes | No | Yes | - | Yes |
| Do civil community societies participate effectively in care of the elderly? | Yes | Yes | Yes | No | Yes | Yes | limited role |

| Item | UAE | Bh | KSA | Om | Qa | Kw | Ym |
|---|---|---|---|---|---|---|---|
| Is the concept of homecare of the elderly applied? | Yes | Yes | No | Yes | Yes | Yes | No |
| Are there mobile units for care of the elderly? | No | Yes | to some extemt | No | Yes | Yes | No |
| Is there a media plan for comprehensive awareness and education about, diseases, care of the elderly and utilizing the experiences of the elderly? | - | **** Yes | No | No | Yes | - | with 2008 plan |

* There is Ministerial committee headed by the director of central dept. of PHC and membership of various concerned departments.

** There is a dept. for care of the elderily the Ministry of Social affairs and labour.

*** Requires a comprehensive Gulf and national stady.

**** Within the National strategy of Elderly care.

# Infant and Child Mortality at District Level of India: A Modified Brass Approach

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## ABSTRACT

**Background: In India, direct estimation of child mortality rates is not possible due to insufficient death registration. Brass method is the popularly used indirect technique to estimate child mortality in developing countries. Indirect estimates of the probability of dying from birth to age x, obtained by Brass method based on child survival data are sometimes unrealistic, being not monotonically increasing for increasing x.**

**Method: State and district level child mortality estimates obtained by Brass method from 1991 and 2001 census data were improved by logit smoothing. Using two of the smoothed child mortality estimates, infant mortality estimate is obtained by fitting a two parameter Weibull survival function.**

**Results and conclusion: The reliability of the estimates have been established by cross checking with the 1991 and 2001 census data on the increase/decrease of percentage of children dead. Udupi and West Kameng district has the lowest and highest infant mortality rate respectively.**

**Key Words: Child mortality, district, India, Infant mortality, logit, Weibull.**

## 1. Introduction

Infant and Child mortality have traditionally been considered as the indicator of overall socio-economic wellbeing, child health and mortality conditions of a region (Chandra Sekhar 1972, Fayissa 2001, Saha and Roy 2002). In India, registration of deaths is not satisfactory, particularly at the vulnerable period of infancy and childhood. As a result, the death rate implied by the reported deaths is not reliable and usually under represents the true death rate prevalent in the population (Saha and Roy 2002). The sample registration system (SRS) and the national family health surveys (NFHS) provide information on child mortality at the state level. State and district level estimates of child mortality were also made by Registrar General of India (1988, 1997) using 1981 and 1991 census data. A more detailed effort has been made by Rajan and Mohanachandran (1998), providing these estimates for the states and the districts based on 1991 census data. Recently, Rajan et al. (2008) estimated infant and child mortality using 2001 census data for the states and the districts adopting a different (modified) methodology. All these estimates showed a declining trend in infant mortality. However, it would be ideal to estimate the infant mortalities by a single method on different census data to ensure that the differences in the estimates of different periods are not due to the differences in methodologies. Further, it is intuitive that there is a correspondence between the decline in infant and child mortality and the decline in the percentage of children who died over different periods. We have, in our earlier work, estimated the infant mortality estimates for 1991

and 2001 for the states and union territories of India (Sarma and Choudhury 2011). An analysis of the 1991 and 2001 census data on children ever born and children who died as reported by mothers, have established the reliability of our estimates.

It is well known that the proportions of children ever born who have died are indicators of child mortality and can yield robust estimates of childhood mortality. Brass (1964, 1975) was the first to develop a procedure for converting proportions dead of children ever born reported by women in different age groups of the childbearing period into estimates of the probability of dying before attaining certain exact childhood ages. He observed that the relation between the proportions of children dead by age group of mothers (*D(i)*, *i*=1 for age group 15-19, *i*=2 for age group 20-24, …, *i*=7 for age group 45-49) and the probability of dying before age x [q(x)], is primarily influenced by the age pattern of fertility.

Brass established a set of correspondences between ages of mothers and ages of their children for whom cumulative mortality is best identified, and these correspondences have been widely used by all subsequent analysts. These correspondences, however, are not exact and depend on the reproductive histories of the particular group of women reporting their births (Preston et. al. 2003). Brass developed a set of multipliers (adjustment factors) to adjust for the particular reproductive histories of a group of women and to convert the observed values of the proportions of children dead into estimates of the probability of dying before age *x*. To increase flexibility of Brass' original method Sullivan (1972) developed a set of adjustment factors based on data generated from observed fertility schedules and the Coale-Demeny regional model life tables. Trussell (1975) also developed a set of multipliers based on a wider range of cases, using data generated from the model fertility schedules developed by Coale and Trussell (1974), which are now more commonly used.

Brass method is, however, subject to certain types of errors. Such errors arise from misreporting of the number of children ever born and children dead; Inclusion of still births as live births and omission of living children who moved away from their mother's household; changes in fertility levels and from selective mortality among mothers. Fortunately, the bias from selective mortality is typically small (except in populations with high HIV prevalence) because female mortality is low in the child bearing interval (Preston et al. 2003, Chap. 11). Another limitation of this method is that it suggests to disregard the estimate of *q*(1), the probability of dying before age one, based on women aged 15-19, as this estimate is usually too high. This bias results from the fact that younger women have a high proportion of first births, which generally have above-average risks of mortality. Also the early child bearers tend to come from a lower socioeconomic stratum with higher mortality risks (Ewbank 1982). Despite these limitations this method has many appealing characteristics and has been found to estimate child mortality levels and trends over roughly a 10 year period rather well (Hill 1991).

Brass-type estimation has brought a revolution in child mortality estimates in less developed countries (Preston et al. 2003, Chap. 11). However, it has been observed that in some data sets of children ever born (CEB) and children surviving (CS) to mothers of different age groups, the estimates of q(x) obtained by Trussell's variant of Brass method are not monotonically increasing. For instance, the CEB, CS data of Zimbabwe Demographic and Health Survey, 1994 yields the following estimates: *q*(1)=0.0605, *q*(2)=0.0858, *q*(3)=0.0760, *q*(5)= 0.0855 and *q*(10)=0.0960 (Preston et al. 2003, Chap.11, Page 232). Note that *q*(2)>*q*(3) which does not conform to reality as the probability of dying before age 3 cannot be less than the probability of dying before age 2. This situation is frequently encountered while trying to estimate infant and child mortality for the states and the districts of India using 1991 and 2001 census data.

Though the above method assumes constant fertility and childhood mortality in the recent past, there are methods to avoid the problems caused by declining fertility when data for true cohorts are available from censuses or surveys taken 5 or 10 years apart (United Nations 1983, Chap. III). Even this does not remove the problem of not having monotonically increasing *q(x)* for some states of India. For instance, consider the state of Maharashtra. The estimates based on 1991 and 2001 census data are: *q*(3)=0.0783, *q*(5)=0.0841 and *q*(10)=0.0812. Here also, *q*(5)>*q*(10), which violates reality.

Therefore, it is essential to look for some sort of smoothing in the results of *q(x)* obtained by the above methods so that these estimates remain valid for all data sets. This can be done by logit smoothing technique using the logit of the Brass' general standard life table. Roy (1989) has derived a reliable estimate of child survivorship function [*l(x)* =1-*q(x)*] for India by logit smoothing. After getting the smoothed values of *l(2), l(3), l(5)* (in case of data from one census) or the values of *l(3), l(5)* and *l(10)* (in case of data from two censuses) one can estimate *l*(1) [and consequently *q*(1)] by fitting a two parameter Weibull survival function using any two of the smoothed estimates (Choe 1981).

In this paper we have made an attempt to extend our earlier work of infant mortality estimation from state level to district level.

**1.1. Objective: To Estimate infant and child mortality rates at district level of India using 2001 census data.**

## 2. Methods and Materials

We have first estimated the *l(x)* values for x = 1,2,3 *and* 5 by Brass method using Trussell's multipliers (South model) from 2001 census data on CEB and CS. In many districts these values are found not to be monotonically decreasing (as *q(x)* values are not monotonically increasing). We have applied logit smoothing to make the *l(x)* values monotonically decreasing. The logit transformation of *l(x)* for *x*=2, 3, 5, ignoring *l*(1) (as *q*(1) is suggested to be disregarded), are obtained by

$$y(x) = 0.5ln\left(\frac{1 - l(x)}{l(x)}\right)$$

The smoothed values of *y(x)* are then obtained as:

$$\hat{y}(x) = y_s + \frac{1}{3}\sum_{\substack{x=2,3,5 \\ (x\neq 4)}} [y(x) - y_s(x)]$$

(Roy, 1989)

For x=2, 3 and 5 where $y_s(x)$ is the logit of the Brass General Standard Life Table (These values are provided in United Nations Manual X, 1983, Chap. III, Page 77).

From these smoothed logit values

$[\hat{y}(x)]$

the smoothed *l(x)*values for *x*=2, 3 and 5 are obtained from

$$\hat{l}(x) = \frac{1}{1+exp[2\hat{y}(x)]}$$

It is to be noted that, since the Weibull model has only two parameters, a pair of *l(x)* values are sufficient to estimate them (Choe 1981). In our case, we have three smoothed l(x) values, and a decision has to be made regarding which pair is to be used in estimating the parameters. Our experimentation with south model life table survival probabilities by taking three combinations *l*(2), *l*(3); *l*(2), *l*(5) and *l*(3), *l*(5) shows that the combinations of *l*(2), *l*(3) and *l*(2), *l*(5) give almost the same estimate of *l*(1). However, since the estimate of *l*(1) obtained by using *l*(2) and *l*(5) is slightly smaller than the one obtained by using *l*(2) and *l*(3), we chose to use *l*(2) and *l*(5) to estimate *l*(1) as a precaution against under-estimation of *q*(1). Using $\hat{l}(2)$ and $\hat{l}(3)$ in equation (3), $^{y}$ is estimated as

$$\hat{\gamma} = \frac{ln\left[ln\left\{\frac{1}{\hat{l}(2)}\right\}\right] - ln\left[ln\left\{\frac{1}{\hat{l}(5)}\right\}\right]}{ln(2) - ln(5)}$$

Then using

$\hat{l}(2)$

in equation (3), $\lambda$ is estimated as

$$\hat{\lambda} = exp\left[ln\left\{ln\left(\frac{1}{\hat{l}(2)}\right)\right\}\right] - \hat{\gamma}ln(2)$$

The final estimates of *l(x)* and consequently *q(x)* are obtained by using $\hat{\lambda}$ and $\hat{\gamma}$ in equation (1).

**The Data To Be Used In This Study**

1. 2001 census data on children ever born and children surviving of both sexes combined classified by five years age group of women for the districts of India. We have considered the women aged 15-34 instead of the entire childbearing period 15-49 as we are interested in estimating *q(x)* only up to age 5.

**2.** 2001 census data on total female population in the age group 15-34 classified by five years age interval.

## 3. Results and Discussion

We have estimated the infant and child mortalities [*q*(1), *q*(2), *q*(3) and *q*(5)] for both sexes (person), male and female for the districts of India based on 2001 census data. In 2001 India had 593 districts and the limitation of space prevents us from providing all these estimates. We have provided the distribution of a number of districts in broad intervals of IMR (Table 1 - next page). It has been found that Udupi district of Karnataka has the lowest and West Kameng district of Arunachal Pradesh has the highest IMR with 31 and 188 infant deaths per thousand live births respectively. Further, the inter district range of IMR has been found to be lowest in Delhi with a difference of 9 infant deaths per thousand live births and highest in Arunachal Pradesh with a difference of 113 infant deaths per thousand live births.

Table 2 (page 32) presents the ten best and worst districts in terms of q(1).

The 25 districts having lowest IMR belong to the states of Kerala (28%), Maharashtra (28%), Karnataka (12%), Andhra Pradesh, Tamil Nadu, Manipur, Gujarat (each with 4%), Union Territories Goa (8%), Pondichery and Daman Diu each with (4%) (Figure 1).

The 25 districts having highest IMR belong to the states of Madhya Pradesh (52%), Arunachal Pradesh (16%), Orissa and Rajasthan (each with 8%), Uttar Pradesh, Chattishgarh, Jammu and Kashmir and Meghalaya (each with 4%) (Figure 2).

We have not presented the infant and child mortality estimates of all the districts keeping in mind the limitation of space. However, we will provide the estimates on demand.

## References


Brass, W. (1964). Uses of census and survey data for estimation of vital rates, (E/CN. 14/CAS.4/V57), paper prepared for the African Seminar on Vital Statistics. Addis Ababa, 14-19 December 1964.

Brass, W. (1975). Methods of estimating fertility and mortality from defective and limited data. Chapel Hill (North Carolina): Laboratory for Population Statistics, University of North Carolina, (Occasional Publications of the Laboratory for Population Statistics).

Chandra Sekhar, S. (1972). Infant Mortality, Population Growth and Family Planning in India, London: George Allen and Unwin Ltd.

Choe, M. K. (1981). Fitting the age pattern of infant and child mortality with the Weibull survival distribution, Asian and Pacific Census Forum, 7(4), 10-13.

Coale, A. J. and Trussell, J. (1974). Model fertility schedules: Variations in age structure of childbearing in human populations, Population Index, 40(2):185-258.

Coale, A. J. and Trussell, J. (1977). Estimating the time to which Brass estimates apply, Population Bulletin of the United Nations, 10, 187-89.

Ewbank, D. C. (1982). The sources of error in Brass's method for estimating child survival: the case of Bangladesh, Population Studies, 36(3), 459-474.

**Table 1. The number of districts in different intervals of IMR (person, Male, Female) (Total):**

| IMR Interval | Number of Districts (person) | Number of Districts (Male) | Number of Districts (Female) |
|---|---|---|---|
| Below 50 | 73 | 69 | 75 |
| 50-69 | 205 | 228 | 181 |
| 70-89 | 172 | 164 | 182 |
| 90-109 | 106 | 97 | 101 |
| 110-129 | 29 | 27 | 47 |
| 130-149 | 5 | 5 | 5 |
| Above 150 | 3 | 3 | 2 |
| Total | **593** | **593** | **593** |

**Table 2. Ten Best and Worst Districts in terms of q(1) (Total, person):**

| Best | | Worst | |
|---|---|---|---|
| **District** | ***q*(1)** | **District** | ***q*(1)** |
| Udupi | 0.031 | East Kameng | 0.188 |
| Sangli | 0.032 | Lower Subansiri | 0.160 |
| Pune | 0.032 | Kargil | 0.152 |
| Satara | 0.032 | Katni | 0.141 |
| Malappuram | 0.033 | Upper Subansiri | 0.140 |
| South Goa | 0.033 | Panna | 0.133 |
| Kozhikode | 0.033 | Kandhamal | 0.132 |
| Kannur | 0.033 | Tawang | 0.131 |
| Kodagu | 0.034 | Umaria | 0.123 |
| Mahe | 0.034 | Vidisha | 0.122 |


Fayissa, B. (2001). The determinants of infant and child mortality in developing countries: the case of Sub-Sahara Africa, The Review of Black Political Economy, Springer, 29(2), 83-98.

Feeney, G. (1976). Estimating infant mortality rates from child survivorship data by age of mother, Asia and Pacific Census Newsletter, 3(2), 12-16.

Hill, K. (1991). Approaches to measurement of child mortality: a comparative review, Population Index, 57(3), 368-382.

Preston, S. H., Heuveline, P. and Guillot, M. (2003). Indirect Estimation Methods. In: Demography-measuring and modeling population processes, 224-255 (First Indian Reprint), Blackwell Publishers Limited (UK).

Rajan, S. I. and Mohanachandran, P. (1998). Infant and child mortality estimates - Part 1, Economic and Political Weekly, 33(19), 1120-1140.

Rajan, S. I., Nair, P. M., Sheela, K. L., Jagatseb, L. and Mishra, N. R. (2008). Infant and child mortality in India-district level estimates. Report of Population Foundation of India, New Delhi.

Registrar General of India (1988). Child mortality estimates of India, Occasional Paper No 5 of 1988, Controller of Publications, New Delhi.

Registrar General of India (1988). (1997). District level estimates of fertility and child mortality for 1991 and their inter-relations with other variables, Occasional Paper No 1 of 1997, Controller of Publications, New Delhi.

Roy; S. G. (1989). Estimating child mortality and modeling its age pattern for India. Janasamkhya, 7(1), 21-39.

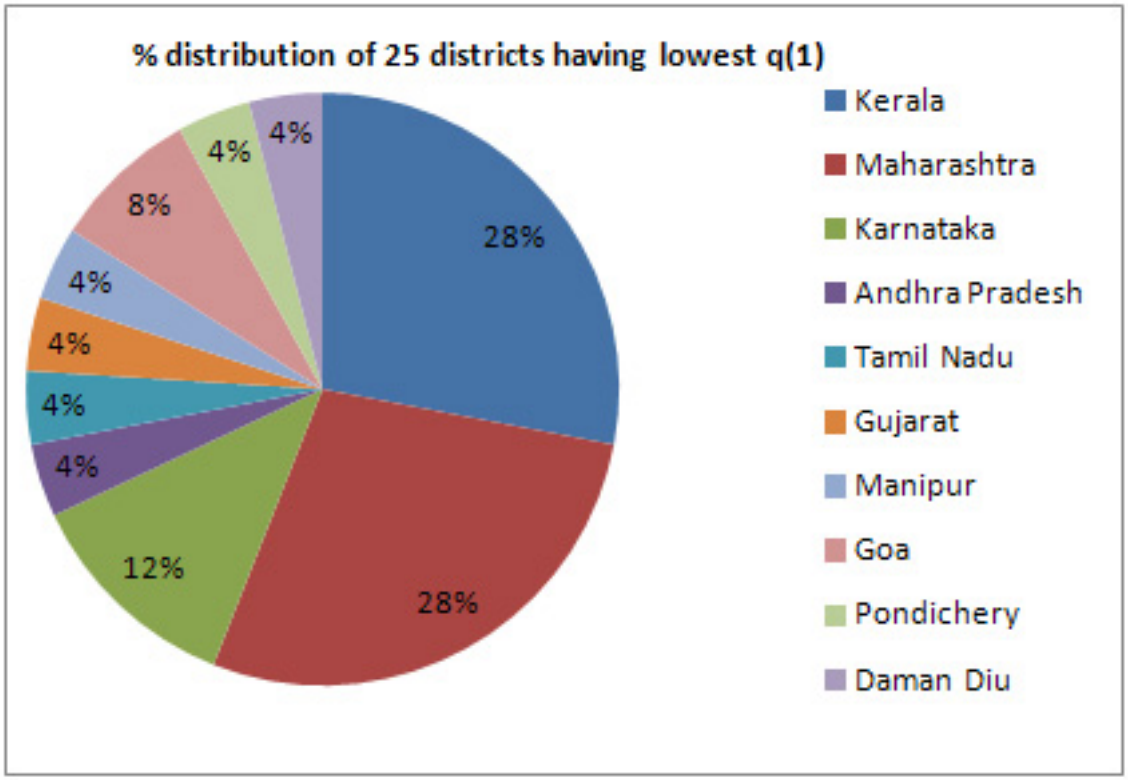


**Figure 1. Percentage distribution of 25 districts having lowest IMR**

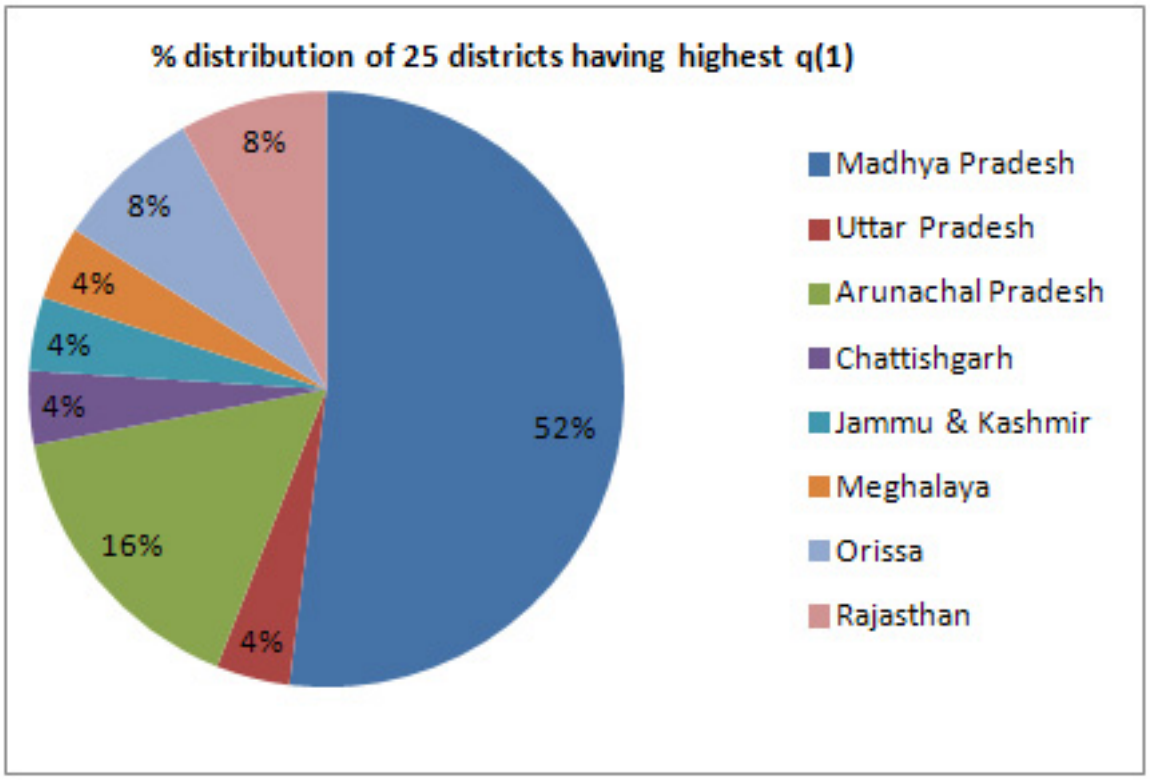


**Figure 2. Percentage distribution of 25 districts having highest IMR**

Saha, A. K. and Roy, D. (2002). Generating life tables for the districts of West Bengal: A model approach, Journal of Combinatorics, Information and System Sciences, 7(1-4), 23-40.
Shryock, H. S. and Seigel, J. S. (1976). Some methods of estimation for statistically underdeveloped areas. In: Methods and Materials of Demography, 483-507, Academic Press, New York.
Sullivan, J. M. (1972). Models for the estimation of the probability of dying between birth and exact ages of early childhood, Population Studies, 26(1), 79-97.
Trussell, J. (1975). A re-estimation of the multiplying factors for the Brass technique for determining childhood survivorship rates, Population Studies, 29(1), 97-108.
United Nations (1983). Estimation of child mortality from information on children ever born and children surviving. In: Manual X: Indirect Techniques for Demographic Estimation, Population Studies, 81, 73-96.
United Nations (1983). Estimation of age specific fertility from increment of cohort parities between two surveys. In: Manual X: Indirect Techniques for Demographic Estimation, Population Studies, 81, 58-61, New York, USA.
United Nations (1983). (1983). Demographic Models. In: Manual X: Indirect Techniques for Demographic Estimation, Population Studies, 81, 11-26.

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