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Editorial

Dr Abdul Abyad

Chief Editor



In this issue of the journal a paper discusses the health care system adjustment for elderly care. Other papers deal more with clinical issues. A paper from the Sultanate Oman looked at the rate and determinants of functional limitation in the elderly population in one region in Oman. Records of the comprehensive assessment of elderly population in Al-Dakhliyah between 2008 and 2010 were reviewed. The study included 1816 elderly aged between 60 and 94 years. More elderly were dependent on IADL (56.12%) than ADL (25.17%). Depression and dementia were more frequent among elderly dependent on ADL (32.57% and 43.63%) than those dependent on IADL (21.30% and 33.83%). The authors concluded that deterioration of functional abilities among healthy elderly is inevitable because of the advance in age. Prevention and management of depression, dementia and musculoskeletal disorders and improvement of socioeconomic status may reduce the rates of dependency.

A paper from Egypt looked at the relationship between glycaemic control and oxidative stress in elderly diabetic patients. In diabetes mellitus, oxidative stress results both from exposure to hyperglycaemia and from functional limitation of the hexose monophosphate shunt. In a Cross sectional study, at Ain Shams University, with 82 subjects > 50years, full clinical assessment, FBS (fasting blood sugar), 2hr PP (post prandial), glycated hemoglobin (HbA1c), TAC (total antioxidant capacity), MDA (malonyldialdehyde) was measured. The authors noted a slightly negative correlation between FBS, HBA1C and TAC and a slightly positive correlation between MDA and FBS, HBA1C. MDA showed a slightly negative correlation with TAC. The authors concluded that in elderly diabetic patients oxidative stress is highest in those suffering from nephropathy.

A paper from Bangladesh presented the needs of the destitute elderly of Bangladesh. Bangladesh is one of the poorest densely populated least developed countries in the world having about 10 million older people. Traditionally the older people were respected as a source of wisdom by the young generation in the country. Family and family related institutions like caste system, kinship system etc. performed a vital role to minimize the needs of elderly. But due to

the technological advancements, these systems are not functioning properly. As a result, the elderly people are becoming mistreated. Even they cannot properly cope with the new changes in the social, political, cultural aspects and face a vulnerable situation regarding satisfying their different needs.

A retrospective study from Amman was conducted to evaluate the findings in shoulder magnetic resonance imaging at King Hussein Medical Center. All shoulder magnetic resonance imaging at King Hussein Medical Center done between March 2012 till February 2013 and their reports were reviewed and the results analyzed through the PACS system. A total number of 114 patients had shoulder magnetic resonance imaging. The authors concluded that magnetic resonance imaging of the shoulder joint is a common non invasive investigation for shoulder pain that can detect many shoulder abnormalities, the most common abnormality found in the study was acromioclavicular osteoarthritis.

A case report presented Goldenhar Syndrome which is a rare congenital anomaly which consists of a triad of an ocular dermoid cyst, preauricular skin tags and vertebral dysplasia. It is associated with anomalous development of the first and second branchial arch. The case reports a rare case of an infant female born to non-consanguineous parents who presented with limbal dermoid, preauricular skin tag and ear canal atresia.

Rates and Determinants of Functional Limitations among the Elderly Population in Al-Dakhlyia Region, Sultanate of Oman

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ABSTRACT

Background: Ageing of the Omani society calls for the evaluation of functional abilities and the factors that should be addressed by health programs. This study was conducted to reveal the extent and determinants of dependency on IADL and ADL among the elderly in Al-Dakhliyah governorate, Oman.

Methods: Records of the comprehensive assessment of elderly population in Al-Dakhliyah between 2008 and 2010 were reviewed. Data covered socio-demographic characteristics, medical and nutrition evaluation and the assessment of mental status and functional abilities. Logistic regression analyses were used to identify the significant determinants of ADL and IADL at the 5% level.

Results: The study included 1816 elderly aged between 60 and 94 years. More elderly were dependent on IADL (56.12%) than ADL (25.17%). Depression and dementia were more frequent among the elderly dependent on ADL (32.57% and 43.63%) than those dependent on IADL (21.30% and 33.83%). Dependency on IADL was predicted by age, unfavorable socioeconomic status, stroke with residual deficits, use of aid, joint problems, dementia and incontinence. Age, stroke with residual deficits, poor perception of health, physical inactivity, corneal opacity, hearing defect, dementia, depression, incontinence, the use of aid and mobility restriction predicted dependency on ADL.

Conclusion: Deterioration of functional abilities among healthy elderly is inevitable because of the advance in age. Prevention and management of depression, dementia and musculoskeletal disorders and improvement of socioeconomic status may reduce the rates of dependency.

Introduction

The age group that grows faster than any other is that of 60 years and older [1]. Elderly in Oman constituted 3.0% of the population in 1993, increased to 3.5% in 2010 and is expected to reach 15.2% by 2050 [2]. Such rapid increase is the result of the decline in infant mortality and the increase in life expectancy brought by the rapid economic and social developments, improvement in the standard of living and the coverage by quality healthcare services [3, 4].

Disability is the result of the interaction between health condition and contextual factors including personal and environmental factors and it involves the inabilities, limitations or restrictions of capacity [5]. Functional abilities of the elderly are often determined by the difficulties faced in or the need for assistance to perform activities of daily living (ADL) such as bathing, dressing, feeding, transfers, continence and ambulation and instrumental activities of daily living (IADL) like housekeeping, cooking, taking medicines, using transportation and telephone, shopping and managing money [5, 6].

The decline in ADL and IADL calls for the evaluation of elder's socio-environmental setting and the need for additional support [6]. The assessment of functional impairment is essential for identifying the common physical impairments among the elderly that are necessary for geriatric healthcare planning. It is pivotal for preventing secondary morbidities following physical impairment such as reactive depression. It is also related to the effective counseling of caregivers regarding the areas of impairment and the assistance required [7].

In 2008, the Ministry of Health in Oman introduced a comprehensive health assessment program for the elderly at primary health care level in Al Dakhliyah governorate to identify and meet their health and social needs. This study aims at reviewing the records of the elderly population to reveal the rates and determinants of functional impairments among the elderly population.

Methods

Records of comprehensive geriatric assessment of the population aged 60 years and older who attended 13 primary healthcare facilities in 5 wilayats in Al-Dakhliyah governorate between 2008 and 2010, were reviewed. Data extracted included:

- Socio-demographic characteristics including, age, sex, marital status, education and socioeconomic status based on four areas namely social contact, social activities, living situation and economic situation [8]. The maximum score of the evaluation of socioeconomic status is 25; a score below 17 indicates the possibility of social risk that calls for evaluation by a social worker.
- Health profile included past medical history of chronic non-communicable diseases based on previous diagnosis and medical evaluation. The operational definition of polypharmacy is the use of more than 5 medications including herbal medicine.

- Screening for incontinence using a questionnaire inquiring into urge symptoms, urge incontinence, stress incontinence and stool incontinence. The score ranges from 0 to 7 [8]. A score greater than zero indicates possible incontinence that requires investigation.

- Evaluation of nutritional status using the 16-item mini-nutrition assessment with two components [8, 9]. The screening component (6 questions) addresses a recent (over the past 3 months) decline in food intake, weight loss, mobility, psychological stress or acute diseases, neuropsychological problems and body mass index yielding a score ranging from 0 to 14 and a score ≥ 12 indicates a satisfactory nutritional status. The second component (10 questions) is applicable to participants scoring ≤ 11 on the screening component. It covers independence at home, medications taken per day, skin lesions, number of full meals, consumption of protein foods, fruits and vegetables, fluid intake, mode of feeding, self-perception of nutritional and health status yielding a score ranging from 0 to 16. The score on the mini-nutrition assessment is computed by summing the scores of the two components. Participants are classified into sound nutrition status (score > 23.5), at risk of malnutrition (score 17 - 23.5) and existing malnutrition (score < 17).

- Evaluation of mental status using the Arabic version of the mini-mental state questionnaire. The scores range from 0 to 22. A score of ≤ 14 indicates the presence of dementia which is classified into mild (score 10-14) and severe (score 0-9) [8, 10].

- Screening for depression using the Arabic version of the geriatric depression scale (15 questions). A score of ≥ 5 indicates the presence of depression which is further classified into mild (score 5 to 10) and severe (score ≥ 11) [8, 11, 12].

- Functional abilities were determined based on abilities to perform instrumental activities of daily living (IADL) and activities of daily living (ADL). ADL assesses participants' ability to perform basic activities of daily living using Barthel index scoring [8, 13] including feeding, transferring between bed and chair, toileting, dressing and bathing, grooming, walking and being continent, yielding a score ranging from 0 to 100. IADL assesses participants' ability to live independently in their own home [8, 14] and reflected by their abilities to use telephone, transportation, shopping, food preparation, taking medications, laundry, housekeeping and ability to handle finances, yielding a score ranging from 0 to 8. Elderly scoring less than 100 on ADL and less than 8 on IADL were classified as dependent for the purpose of analysis.

- Mobility and balance and gait were determined using the "Time Test" and "Tinetti test". On the "Time test", a time of ≤ 10 seconds indicates the absence of mobility handicap. The "Tinetti Test" (16 questions) is divided into 2 "the balance test" and "gait test". The "balance test" (9 questions) covers setting balance, ability to arise, attempt to rise, immediate standing balance, standing balance, standing nudged, standing with closed eyes, turning and sitting down. The "gait test" (7 questions) involves testing the initiation of gait, step length and height, step symmetry, step continuity, path, trunk and walking stance. The scores range from 0 to 28; a score \leq than 24 indicates a risk of fall [8, 15, 16].

All instruments were translated into Arabic and validated and compiled by the Ministry of Health in a field manual for use by primary care physicians and nurses [8].

Data were analyzed using the Statistical Package for Social Sciences (SPSS, ver.19) and presented as number and percentage. The odds ratio (OR) and the corresponding 95% confidence interval (95% CI) were computed. The case-control approach analysis was adopted to identify the determinants of dependence on IADL and ADL using the univariate and multivariate logistic regression analyses. Significance of the results was judged at the 5% level.

The study was approved by the Ethics Review Committee, Sultan Qaboos University and the Directorate General of Health Affairs, Al-Dakhlyiha region.

Results

The study included the records of 1816 elderly; 51.21% were women and 65.60% were in the age group of 60 to less than 70 years while 9.61% were in the age group of 80 years and older. More elderly were dependent on IADL (56.12%) than ADL (25.17%). Dependency increased with the increase in age and was the highest among elderly in the age group of 80 years and older for IADL (OR=3.39; 95%CI= 2.27, 5.05) and ADL (OR=4.93; 95%CI= 3.46, 7.01). Impairment of IADL and ADL was observed among nearly equal proportions of men and women. Women in this study constituted 84.73% of widows and 58.89% of divorced. Relative to married elderly, widows and widowers were more likely to be dependent on IADL (OR= 1.35; 95%CI= 1.08, 1.68) and ADL (OR= 1.54; 95% CI= 1.20, 1.97). Table 1 (next page)

The majority of women (97.56%) and men (76.09%) were illiterate. Few men (1.58%) and none of the women received formal education. Elderly who were just able to read and write or received formal education were 31.0% less likely to be dependent on IADL and 43% less likely to be dependent on ADL relative to the illiterate. Unfavorable socio-economic status increased significantly the dependency of elderly on IADL (OR=2.79; 95%CI=2.03, 3.82) and ADL (OR=2.49; 95%CI=1.87, 3.32). Table 1

More than half (58.81%) of the elderly were suffering from hypertension (42.52%), hypercholesterolemia (30.226%), diabetes (26.05%) and coronary heart diseases (12.64%) among others. The risk of dependency in the presence of chronic physical diseases increased for IADL (OR= 1.26; 95% CI= 1.03, 1.53) and ADL (OR= 1.61; 95% CI= 1.27, 2.02). This risk increased significantly with the increase in the number of chronic diseases. Elderly with residual motor and sensory impairment secondary to stroke were more likely to be dependent on IADL (OR=3.91; 95% CI= 1.89, 8.08) and ADL (OR=9.40; 95%CI=5.04, 17.55). Unsatisfactory nutrition status was more likely among elderly dependent on IADL (OR=2.04; 95%CI=1.44, 2.87) and ADL (OR=3.34; 95%CI=2.34, 4.76). Elderly dependent on ADL were more likely to be on polypharmacy (OR= 1.76; 95%CI=1.31, 2.56). Table 2 (pages 7 & 8)

Elderly dependent on IADL were 1.99 times (95%CI= 1.06, 3.74) more likely to be probably incontinent and 8.91 times (95% CI= 4.07, 19.46) more likely to be actually incontinent. Those dependent on ADL were 3.29 times (95%CI= 1.83, 5.92) more likely to be probably incontinent and 7.09 times more likely to be actually incontinent (95%CI= 4.41, 11.39). Table 2

Joint problems were associated with higher likelihood of dependency on IADL (OR=1.66; 95% CI= 1.34, 2.04) and ADL (OR=1.92; 95% CI= 1.52, 2.43). The use of aid was more likely among elderly dependent on IADL (OR=1.67; 95%CI=1.35, 2.06) and ADL (OR=1.97; 95%CI= 1.58, 2.49). Also, physical inactivity was more likely among elderly dependent on IADL (OR= 1.49; 95% CI= 1.19, 1.84) and ADL (OR=2.57; 95%CI=2.03, 3.26). Poor health perception was higher among elderly dependent on IADL (OR=1.53; 95%CI= 1.05, 2.24) and much higher among those dependent on ADL (OR=9.52; 95% 6.26, 14.46). Table 2

Elderly dependent on IADL were significantly more likely to suffer mild (OR=2.07; 95%CI= 1.54, 2.78) and severe depression (OR=10.14; 95%CI=2.38, 43.18). Elderly dependent on ADL were 3 times more likely to have mild (OR= 3.60; 95%CI=2.72, 4.78) and severe depression (OR=3.91; 95%CI=1.76, 8.66). Mild dementia was nearly 2.5 times higher among elderly dependent on IADL (OR=2.62; 95%CI=2.02, 3.40) and ADL (OR=2.73; 95%CI=2.10, 3.55) while severe dementia was nearly 8 times more likely among elderly dependent on IADL (OR=8.30; 95%CI=3.26, 21.15) and ADL (OR=8.64; 95%CI=4.62, 16.13). Table 3 (page 9)

Higher risk of cataract (OR=1.28; 95%CI=1.04, 1.57), corneal opacity (OR=1.50; 95%CI=1.18, 1.89) and hearing impairment (OR=2.79; 95% CI= 1.86, 4.17) was encountered among elderly dependent on IADL. Elderly dependent on ADL were more likely to have corneal opacity (OR=1.97; 95%CI=1.54, 2.54) and hearing impairment (OR=2.79; 95% CI= 1.96, 3.97). Table 4 (page 10).

Elderly dependent on IADL were more than 2 times more likely to have mobility limitation (OR=2.26; 95%CI=1.83, 2.78) and to be at risk of fall (OR=2.73; 95%CI=2.05, 3.65). Elderly dependent on ADL were 7 times more likely to have mobility limitation (OR=7.32; 95%CI=5.59, 9.58) and to be at risk of fall (OR=7.17; 95%CI=4.82, 10.68). Table 5 (page 11)

Significant variables were considered in a multivariate logistic regression model to identify the independent predictors of functional impairment. "Mobility" and "balance and gait" were combined in one variable categorized into either "mobility" and "balance and gait" are affected and neither "mobility" and "balance and gait" are affected to compensate for missed data.

Impairment of IADL is independently predicted by older age, presence of social risk, past history of stroke with motor and/or sensory residue, presence of dementia, incontinence, joint problems and the use of aids. The model correctly classified 63.9% of elderly people. It predicted 61.7% of elderly independent on IADL and 65.7% of those dependent on IADL (Table 6 - page 12).

Sociodemographic characteristic	IADL				ADL			
	Independent No (%)	Dependent No (%)	Total No (%)	OR (95%CI)	Independent No (%)	Dependent No (%)	Total No (%)	OR (95%CI)
Age in years	n=746	n=954	n=1700		n=1296	n=414	n=1710	
60-	564 (75.60)	572 (59.96)	1136 (66.82)	1.00	934 (72.07)	208 (50.24)	1142 (66.78)	1.00
70-	148 (19.84)	265 (27.78)	413 (24.29)	1.77(1.39, 2.22)	290 (22.38)	127 (30.68)	417 (24.39)	1.97 (1.52, 2.54)
≥ 80	34 (4.56)	117 (12.26)	151 (8.88)	3.39(2.27, 5.05)	72 (5.56)	79 (19.08)	151 (8.83)	4.93 (3.46, 7.01)
Sex	n=747	n=954	n=1701		n=1297	n=414	n=1711	
Men	362 (48.46)	459 (48.11)	821 (48.27)	1.00	637 (49.11)	192 (46.38)	829 (48.45)	1.00
Women	385 (51.54)	495 (51.89)	880 (51.73)	1.01(0.83, 1.22)	660 (50.89)	222 (53.62)	882 (51.55)	1.12 (0.89, 1.39)
Education attainment	n=712	n=916	n=1628		n=1239	n=396	n=1635	
Illiterate	600 (84.27)	812 (88.65)	1412 (86.73)	1.00	1058 (85.39)	361 (91.16)	1419 (86.79)	1.00
Read and write or received formal education	112 (15.73)	104 (11.35)	216 (13.27)	0.69 (0.52, 0.91)	181 (14.61)	35 (8.84)	216 (13.21)	0.57 (0.39, 0.83)
Marital status	n=722	n=925	n=1647		n=1250	n=406	n=1656	
Married	502 (69.53)	581 (62.81)	1083 (65.76)	1.00	855 (68.40)	236 (58.13)	1091 (65.88)	1.00
Divorced	34 (4.71)	50 (5.41)	84 (5.10)	1.27 (0.80, 1.99)	58 (4.64)	26 (6.40)	84 (5.07)	1.62 (1.00, 2.63)
Single	6 (0.83)	13 (1.41)	19 (1.15)	1.87 (0.70, 4.96)	13 (1.04)	6 (1.48)	19 (1.15)	1.67 (0.62, 4.44)
Widow/widower	180 (24.93)	281 (30.38)	461 (27.99)	1.35 (1.08, 1.68)	324 (25.92)	138 (33.99)	462 (27.90)	1.54 (1.20, 1.97)
Socioeconomic status	n=739	n=952	n=1691		n=1286	n=413	n=1699	
No social risk	682 (92.29)	772 (81.09)	1454 (85.98)	1.00	1145 (89.04)	316 (76.51)	1461 (85.99)	1.00
Presence of social risk	57 (7.71)	180 (18.91)	237 (14.02)	2.79 (2.03, 3.82)	141 (10.96)	97 (23.49)	238 (14.01)	2.49 (1.87, 3.32)

Table 1: Functional abilities in relation to the sociodemographic characteristics of the elderly population in Al-Dakhliyah governorate, 2008-2010

General health status	IADL				ADL			
	Independent No (%)	Dependent No (%)	Total No (%)	OR (95%CI)	Independent No (%)	Dependent No (%)	Total No (%)	OR (95%CI)
Use of aid	n=718	n=929	n=1647		n=1263	n=393	n=1656	
No	513 (71.45)	557 (59.96)	1070 (64.97)	1.00	568 (68.73)	207 (52.67)	1075 (64.92)	1.00
Yes	205 (28.55)	372 (40.04)	577 (35.03)	1.67 (1.35,2.06)	395 (31.27)	186 (47.33)	581 (35.08)	1.97 (1.58,2.49)
Polypharmacy	n=716	n=917	n=1633		n=1249	n=393	n=1642	
Not present	618 (86.31)	770 (83.97)	1388 (85.00)	1.00	1086 (86.95)	311 (79.13)	1397 (85.08)	1.00
Present	98 (13.69)	147 (16.03)	245 (15.00)	1.20 (0.91,1.59)	163 (13.05)	82 (20.87)	245 (14.92)	1.76 (1.31,2.56)
Nutrition status	n=246	n=327	n=573		n=372	n=204	n=576	
Satisfactory	166 (67.48)	165 (50.46)	331 (57.77)	1.00	254 (68.28)	80 (39.22)	334 (57.99)	1.00
Unsatisfactory	80 (32.52)	162 (49.54)	242 (42.23)	2.04 (1.44,2.87)	118 (31.72)	124 (60.78)	242 (42.01)	3.34 (2.34,4.76)
Perception of health	n=721	n=929	n=1650		n=1264	n=396	n=1660	
Good or very good	234 (32.45)	331 (35.63)	565 (34.24)	1.00	510 (40.35)	58 (14.65)	568 (34.22)	1.00
As peers of same age	425 (58.95)	469 (50.48)	894 (54.18)	0.78 (0.63,0.96)	660 (52.22)	241 (60.86)	901 (54.28)	3.21 (2.36,4.37)
Poor	48 (6.66)	104 (11.19)	152 (9.21)	1.53 (1.05,2.24)	73 (5.78)	79 (19.95)	152 (9.16)	9.52 (6.26,14.46)
Uncertain	14 (1.94)	25 (2.69)	39 (2.36)	1.26 (0.64,2.48)	21 (1.66)	18 (4.55)	39 (2.35)	7.54 (3.80,14.96)
Physical activity last week	n=688	n=905	n=1593		n=1220	n=383	n=1603	
Yes	499 (72.53)	579 (63.98)	1078 (67.67)	1.00	890 (72.95)	196 (51.17)	1086 (67.75)	1.00
No	189 (27.47)	326 (36.02)	515 (32.33)	1.49 (1.19,1.84)	330 (27.05)	187 (48.83)	517 (32.25)	2.57 (2.03,3.26)

General health status	IADL				ADL			
	Independent No (%)	Dependent No (%)	Total No (%)	OR (95%CI)	Independent No (%)	Dependent No (%)	Total No (%)	OR (95%CI)
Chronic diseases status	n=739	n=944	n=1683		n=1283	n=410	n=1693	
No	327 (44.25)	365 (38.67)	692 (41.12)	1.00	562 (43.80)	134 (32.68)	696 (41.11)	1.00
Yes	412 (55.75)	579 (61.33)	991 (58.88)	1.26 (1.03,1.53)	721 (56.20)	276 (67.32)	997 (58.89)	1.61 (1.27,2.02)
Number of chronic diseases	n=738	n=944	n=1682		n=1283	n=410	n=1693	
None	327 (44.31)	365 (38.67)	692 (41.14)	1.00	562 (43.80)	134 (32.68)	696 (41.11)	1.00
One	238 (32.25)	277 (29.34)	515 (30.62)	1.04 (0.83,1.31)	394 (30.71)	124 (30.24)	518 (30.60)	1.32 (1.00,1.74)
Two	137 (18.56)	207 (21.93)	344 (20.45)	1.35 (1.04,1.76)	249 (19.41)	97 (23.66)	346 (20.44)	1.63 (1.21,2.21)
Three to six	36 (4.88)	95 (10.06)	131 (7.79)	2.36 (1.56,3.56)	78 (6.08)	55 (13.41)	133 (7.86)	2.96 (1.99,4.38)
Stroke and residual deficits	n=735	n=941	n=1676		n=1278	n=407	n=1685	
No stroke	720 (97.96)	879 (93.41)	1599 (95.41)	1.00	1247 (97.57)	360 (88.45)	1607 (95.37)	1.00
Stroke without residual deficits	6 (0.82)	19 (2.02)	25 (1.49)	2.59 (1.03,6.52)	17 (1.33)	9 (2.21)	26 (1.54)	1.83 (0.81,4.15)
Stroke with residual deficits	9 (1.22)	43 (4.57)	52 (3.10)	3.91 (1.89,8.08)	14 (1.10)	38 (9.34)	52 (3.09)	9.40 (5.04,17.55)
Incontinence	n=723	n=940	n=1663		n=1270	n=400	n=1670	
Absent	702 (97.10)	833 (88.62)	1535 (92.30)	1.00	1217 (95.83)	325 (81.25)	1542 (92.34)	1.00
Probable	14 (1.94)	33 (3.51)	47 (2.83)	1.99 (1.06,3.74)	25 (1.97)	22 (5.50)	47 (2.81)	3.29 (1.83,5.92)
Present	7 (0.97)	74 (7.87)	81 (4.87)	8.91(4.07,19.46)	28 (2.20)	53 (13.25)	81 (4.85)	7.09 (4.41,11.39)
Joint problems	n=684	n=913	n=1597		n=1223	n=383	n=1606	
No problem	471 (68.86)	522 (57.17)	993 (62.18)	1.00	806 (65.90)	192 (50.13)	998 (62.14)	1.00
Problem present	213 (31.14)	391 (42.83)	604 (37.82)	1.66 (1.34,2.04)	417 (34.10)	191 (49.87)	608 (37.86)	1.92 (1.52,2.43)

Table 2: Functional abilities in relation to the general health status of the elderly population in Al-Dakhliyah governorate, 2008-2010

Mental health status	IADL				ADL			
	Independent No (%)	Dependent No (%)	Total No (%)	OR (95%CI)	Independent No (%)	Dependent No (%)	Total No (%)	OR (95%CI)
Depression	n=718	n=925	n=1643		n=1261	n=390	n=1651	
No depression	642 (89.42)	728 (78.70)	1370 (83.38)	1.00	1113 (88.26)	263 (67.44)	1376 (83.34)	1.00
Mild depression	74 (10.31)	174 (18.81)	248 (15.09)	2.07 (1.54, 2.78)	135 (10.71)	115 (29.49)	250 (15.14)	3.60 (2.72, 4.78)
Severe depression	2 (0.28)	23 (2.49)	25 (1.52)	10.14 (2.38, 43.18)	13 (1.03)	12 (3.08)	25 (1.51)	3.91 (1.76, 8.66)
Dementia	n=687	n=872	n=1559		n=1195	n=369	n=1564	
No impairment	584 (85.01)	577 (66.17)	1161 (74.47)	1.00	958 (80.17)	208 (56.37)	1166 (74.55)	1.00
Mild impairment	98 (14.26)	254 (29.13)	352 (22.58)	2.62 (2.02, 3.40)	221 (18.49)	131 (35.50)	352 (22.51)	2.73 (2.10, 3.55)
Severe impairment	5 (0.73)	41 (4.70)	46 (2.95)	8.30 (3.26, 21.15)	16 (1.34)	30 (8.13)	46 (2.94)	8.64 (4.62, 16.13)

► **Table 3: Functional abilities in relation to the mental health status of the elderly population in Al-Dakhliyah governorate, 2008-2010**

Ocular & auditory findings	IADL				ADL			
	Independent No (%)	Dependent No (%)	Total No (%)	OR (95%CI)	Independent No (%)	Dependent No (%)	Total No (%)	OR (95%CI)
Cataract	n=675	n=854	n=1529		n=1187	n=352	n=1539	
No	425 (62.96)	488 (57.14)	913 (59.71)	1.00	712 (59.96)	208 (59.09)	920 (59.78)	1.00
Yes	250 (37.04)	366 (42.86)	616 (40.29)	1.28 (1.04,1.57)	475 (40.02)	144 (40.91)	619 (40.22)	1.04 (0.82,1.32)
Corneal opacity	n=693	n=901	n=1594		n=1226	n=378	n=1604	
No	552 (79.65)	652 (72.36)	1204 (75.53)	1.00	964 (78.63)	246 (65.08)	1210 (75.44)	1.00
Yes	141 (20.35)	249 (27.64)	390 (24.47)	1.50 (1.18,1.89)	262 (21.37)	132 (34.92)	394 (24.56)	1.97 (1.54,2.54)
Hearing (screening)	n=680	n=884	n=1564		n=1198	n=374	n=1572	
Normal	647 (95.15)	774 (87.56)	1421 (90.86)	1.00	1117 (93.24)	311 (83.16)	1428 (90.84)	1.00
Abnormal	33 (4.85)	110 (12.44)	143 (9.14)	2.79 (1.86,4.17)	81 (6.76)	63 (16.84)	144 (9.16)	2.79 (1.96,3.97)

◀ **Table 4: Functional abilities in relation to ocular and auditory findings among the elderly population in Al-Dakhliyah governorate, 2008-2010**

Impairment of ADL is independently predicted by older age, previous stroke with motor and/or sensory residue, lower perception of health status, impairment of mobility and/or gait and balance, physical inactivity, use of aids, being incontinent, having hearing defect, presence of corneal opacity, as well as the presence of dementia and depression. The model correctly classified 82.9% of elderly people. It predicted correctly 94.9% of elderly independent on ADL and 36.3% of those dependent on ADL (Table 7 - pages 13 and 14).

Discussion

The ability to perform instrumental and basic activities of daily living reflects elderly status of independence. This study revealed that more than half of elderly people were dependent on IADL and a quarter were dependent on ADL. The rate of dependency on IADL is similar to the 53.5% reported from Spain while lower than the 34.6% reported for dependency on ADL [17]. Much lower rates of 6.5% for ADL and 7.9% for IADL were reported from China [18]. The survey conducted in Al Qassim, Saudi Arabia revealed that 12.4% were dependent on IADL and 7.9% were dependent on ADL [19]. Generally, the deficit in IADL precedes the deficit in ADL [20] and the rate of decline in IADL is faster than that of ADL [21, 22]. This was explained by Béland and Zunzunegui (1995) [22] by the greater physical and cognitive integrity required for performing IADL. They noted an improvement in ADL but a continuous deterioration in IADL over time [22].

In accordance with earlier studies [5, 17-19, 21-26] the increase in age is associated with a decline in the abilities to perform tasks of ADL and IADL that increases in magnitude in the oldest group especially for ADL. The Longitudinal study of Chiu et al (2005) [21] showed that each year above the age of 60 years is associated with 12% deterioration in ADL and IADL. The decline of functional abilities with the increase in age has been revealed among healthy and cognitively intact elderly [24] and has been attributed to the increase loss of bone mass [5] and the progressive decline of muscle strength and endurance [27].

A previous study reported a higher level of independence among married elderly [17]. In this study, widowed were more dependent on IADL and both widowed and divorced were more dependent on ADL. Women in this study were not more likely to suffer functional limitations despite constituting more than 80% of widows and nearly 60% of the divorced. This is in disagreement with earlier reports that observed higher rates of dependency on IADL

Mobility & gait	IADL				ADL			
	Independent No (%)	Dependent No (%)	Total No (%)	OR (95%CI)	Independent No (%)	Dependent No (%)	Total No (%)	OR (95%CI)
Mobility (Timed test)	n=721	n=894	n=1615		n=1269	n=356	n=1625	
Not affected	513 (71.15)	467 (52.24)	980 (60.68)	1.00	896 (70.61)	88 (24.72)	984 (60.55)	1.00
Affected	208 (28.85)	427 (47.76)	635 (39.32)	2.26 (1.83, 2.78)	373 (29.39)	268 (75.28)	641 (39.45)	7.32 (5.59, 9.58)
Balance and gait	n=362	n=424	n=786		n=574	n=218	n=792	
Normal	217 (59.94)	150 (35.38)	367 (46.69)	1.00	332 (57.84)	35 (16.06)	367 (46.34)	1.00
At risk of fall	145 (40.06)	274 (64.62)	419 (53.31)	2.73 (2.05, 3.65)	242 (42.16)	183 (83.94)	425 (53.66)	7.17 (4.82, 10.68)

◀ **Table 5: Functional abilities in relation to the state of mobility and gait among the elderly population in Al-Dakhliyah governorate, 2008-2010**

and ADL among women [17, 19, 21, 28]. Murtagh et al (2004) [28] noted that adjusting for socioeconomic status and chronic diseases eliminates the gender variation in functional abilities.

An inverse relation exists between the decline of functional abilities and socioeconomic status determined by education and income [21, 29]. Socioeconomic status in this study is a composite construct of four areas, namely social contact, social activities, living situation and economic status. Elderly who maintained social contact, engaged in social activities, enjoyed better living conditions and had higher income were less likely to be dependent on IADL and ADL. In the final model unfavorable socioeconomic status predicted only dependency on IADL. Previous studies pointed to the contribution of higher economic status to the independency on ADL [21] and the role of higher education attainment in independency on IADL [5, 21, 23, 25, 29]. Illiterate constituted the vast majority of elderly in this study and they were more likely to be dependent on IADL. IADL are complex to which education and social interaction contribute substantially unlike the basic activities of self-care.

Previous studies pointed to the effect of motor impairment on ADL [3, 26, 30] and the effect of cognitive impairment on both ADL [31, 32] and IADL [31, 33]. Graf (2008) [34] concluded that impairment of ADL reflects limitation of physical function while impairment of IADL reflects a decline of cognitive function. In this study, the effect of physical restriction indicated by limitation of mobility, balance and gait as well as physical activity was greater on performing tasks of ADL while the effect of cognitive impairment was greater on the performing complex tasks of IADL. It has been postulated that functional impairment is an outcome of dementia and a feature of depression [32, 33] but also an outcome of depression [30]. In line with previous studies [5, 22] depressed elderly were more likely to be dependent on ADL and IADL however, the effect of depression on IADL has been eliminated when dementia was considered in the final model. The nature of the study precluded the ascertainment of the direction of association between depression and impairment of ADL.

Chronic physical diseases predict the impairment of ADL and IADL [5, 17, 22] but their absence doesn't warrant high levels of physical and social functioning [24, 25, 29]. Chiu et al (2005) [21] observed that each additional disease among the elderly is associated with 38% decline in functional abilities. Almost all elderly in this study were suffering from chronic health problems controllable by medications. Though their presence and their number increased significantly the limitation of ADL and IADL yet dependency on IADL and ADL was independently predicted by two incapacitating conditions namely residual motor and sensory impairment secondary to stroke through limiting physical capacity and incontinence which restrict out of home activities. Millán-Calenti et al (2010) [17] noted that continence is the activity with higher dependence among elderly. The low self-rating of health among elderly dependent on ADL revealed by the present study as well as others [5, 25] is the consequence rather than the reason for dependency. Hearing and visual impairment indicated by the presence of corneal opacity independently predicted dependency on ADL but not IADL. Stuck et al (1999) [30] and Davin et al (2005) [26] found that visual impairment calls for assistance in at least one ADL. Severe visual impairment [35, 36] and dual visual and hearing impairment exert significant adverse effects on IADL [36, 37] but not on ADL [37] by the restriction of mobility outside the home [35].

Independent Predictor	Adjusted OR	95% CI		P-value
		LL	UL	
Age in years				
60-	1.000			
70-	1.506	1.112	2.039	0.008
≥ 80	2.558	1.467	4.463	0.001
Socioeconomic status				
No social risk	1.000			
Presence of social risk	1.910	1.267	2.879	0.002
Stroke and residual deficits				
No stroke	1.000			
Stroke with no residual deficits	2.006	0.522	7.704	0.311
Stroke with residual deficits	6.251	1.404	27.841	0.016
Use of aid				
No	1.000			
Yes	1.408	1.073	1.847	0.014
Joint problems				
No problem	1.000			
Problem present	1.632	1.255	2.124	0.000
Dementia				
No dementia	1.000			
Dementia	3.212	2.304	4.478	0.000
Incontinence				
Absent	1.000			
Probably	1.369	0.605	3.094	0.451
Present	4.828	1.821	12.802	0.002

Nagelkerke $R^2 = 0.191$

Table 6: Independent predictors of impairment of instrumental activities of daily living (IADL) among the elderly population in Al-Dakhliyah governorate, 2008-2010

Independent Predictor	Adjusted OR	95% CI		P-value
		LL	UL	
Age in years				
60-	1.000			
70-	1.506	1.112	2.039	0.008
≥ 80	2.558	1.467	4.463	0.001
Socioeconomic status				
No social risk	1.000			
Presence of social risk	1.910	1.267	2.879	0.002
Stroke and residual deficits				
No stroke	1.000			
Stroke with no residual deficits	2.006	0.522	7.704	0.311
Stroke with residual deficits	6.251	1.404	27.841	0.016
Use of aid				
No	1.000			
Yes	1.408	1.073	1.847	0.014
Joint problems				
No problem	1.000			
Problem present	1.632	1.255	2.124	0.000
Dementia				
No dementia	1.000			
Dementia	3.212	2.304	4.478	0.000
Incontinence				
Absent	1.000			
Probably	1.369	0.605	3.094	0.451
Present	4.828	1.821	12.802	0.002

Nagelkerke $R^2 = 0.367$

Table 7: Independent predictors of impairment of activities of daily living (ADL) among the elderly population in Al-Dakhliyah governorate, 2008-2010 (Part 1)

Independent Predictor	Adjusted OR	95% CI		P-value
		LL	UL	
Incontinence				
Absent	1.000			
Probable	2.030	0.894	4.612	0.091
Present	3.454	1.738	6.867	0.000
Mobility, gait & balance				
Not affected	1.000			
Affected	3.471	2.420	4.980	0.000
Use of aid				
No	1.000			
Yes	1.876	1.324	2.658	0.000

Nagelkerke $R^2 = 0.367$

Table 7: Independent predictors of impairment of activities of daily living (ADL) among the elderly population in Al-Dakhliyah governorate, 2008-2010 (Part 2)

Information on the extent and areas of limitations reflects the degree and types of assistance needed by elderly people. Even healthy elderly will suffer a deterioration of functional abilities because of the advance in age. Knowledge of the modifiable risk factors for the limitation of functional abilities is necessary to plan and implement activities to ensure high levels of functional independence for longer periods. Prevention and effective management of depression, dementia and musculoskeletal disorders and improvement of socioeconomic status of elderly people may reduce the rates of dependency. The cross section nature of this study has its limitations. Longitudinal studies are recommended to identify the factors marking the decline in functional abilities and those contributing to its deterioration overtime.

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Relationship between glycaemic control and oxidative stress in elderly diabetic patients

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ABSTRACT

Background: Oxidative stress is characterized by an increased concentration of O²-derived products that provoke critical, even irreversible, cell injury. In diabetes mellitus, oxidative stress results both from exposure to hyperglycaemia and from functional limitation of the hexose monophosphate shunt.

Aim: Assess relationship between glycaemic control and oxidative stress in elderly diabetic patients.
Methodology: Cross sectional study, Ain Shams University, 82 subjects > 50 years, full clinical assessment, FBS (fasting blood sugar), 2 hour PP (post prandial), glycated hemoglobin (HbA1c), TAC (total antioxidant capacity), MDA (malonyldialdehyde) measured.

Results: Patients with nephropathy have higher levels of MDA and lower levels of TAC. Patients with neuropathy and retinopathy have higher levels of MDA than those without (statistically not significant). There was a slightly negative correlation between FBS, HbA1c and TAC and slightly positive correlation between MDA and FBS, HbA1c. MDA showed a slightly negative correlation with TAC. Patients on insulin therapy have the higher level of MDA and the lower level of TAC in comparison to the other two groups (not statistically significant).

Conclusion: In elderly diabetic patients oxidative stress is highest in those suffering from nephropathy.

Keywords: Oxidative stress, diabetes mellitus, elderly, MDA, TAC

Introduction

All aerobic organisms, including humans, derive most of their metabolic energy from the reduction of oxygen and, consequently, are susceptible to the damaging effects of the small amounts of O²·, OH·, and H²O² that are produced during the metabolism of oxygen. These 3 species, together with unstable intermediates in the peroxidation of lipids, are referred to as reactive oxygen species (ROS). ROS can react with nearly all biological macromolecules (lipids, proteins, nucleic acids, and carbohydrates). As protection against the deleterious effects of free radicals, the human body has developed an antioxidant defense system that includes enzymatic, metal-chelating, and free radical-scavenging activities. They include superoxide dismutases (SODs), catalase, glutathione peroxidase, glutathione reductase, vitamins C and E, β-carotene, and lipoic acid [1].

Oxidative stress is characterized by an increased concentration of O²-derived products that provoke critical, even irreversible, cell injury. O² reduction leads to the synthesis of reactive intermediate compounds such as the superoxide anion (O²·), hydroxyl radical (OH·), hydrogen peroxide (H²O²) and peroxidative derivatives of polyunsaturated fatty acids (PUFA) such as conjugated dienes, lipid hydroperoxides and MDA [2].

In diabetes mellitus, oxidative stress results both from exposure to hyperglycaemia through glycooxidation and sorbitol system activation, and from functional limitation of the hexose monophosphate shunt, leading to a decrease in glutathione synthesis. In diabetes, an altered oxidative metabolism is a consequence either of the chronic exposure to hyperglycaemia or of the absolute or relative insulin deficit; insulin regulates several reactions involved in oxido-reductive metabolism [2]. Hyperglycemia is considered a primary cause of diabetic vascular complications and is associated with oxidative stress, impaired trace element and lipid metabolism as well as pancreatic enzyme abnormalities [3]. Hyperglycemia-induced overproduction of superoxide is the causal link between high glucose and the pathways responsible for hyperglycemic damage. In fact, diabetes is typically accompanied by increased production of free radicals and/or impaired antioxidant defense capabilities, indicating a central contribution for reactive oxygen species (ROS) in the onset, progression, and pathological consequences of diabetes [4]. A study by Rytter et al. (2009) indicates that glycaemic status is associated with oxidative stress even in subjects with well-controlled type 2 diabetes [5].

Methods

This cross-sectional study was conducted on eighty two elderly suffering from type 2 diabetes, recruited from the outpatient clinics of Ain Shams University Hospital. The included patients were 50 years and over. Informed oral consent was taken from all subjects before enrollment in the study.

Subjects who refused to participate in the study, patients suffering from other comorbidities and those receiving antioxidants were excluded from the study.

All the patients were subjected to full clinical assessment (including body mass index, blood pressure measurement,

fundus examination), laboratory investigations including fasting glucose level, glycated hemoglobin, urine analysis, test for microalbuminuria, assessment of oxidative stress via measuring serum malonyldialdehyde (MDA) [EIAab®, immunoassay technique], assessment of antioxidant capacity via measuring serum total antioxidant capacity (TAC) [ImAnOx (TAS/TAC) kit by Immundiagnostik AG, colorimetric method].

Statistical Methods: All collected data were analyzed by using IBM SPSS statistics (V. 19.0, IBM Corp., USA, 2010). The following tests were done: Wilcoxon Rank Sum test, Kruskal Wallis test, Ranked Spearman correlation test. The probability of error at 0.05 was considered significant, while at ≤ 0.01 highly significant.

Results

Eighty two elderly patients with type 2 diabetes mellitus were enrolled in this study. There were 28 males (34.1%) and 54 females (65.9%). Their ages ranged from 50 to 82 years (mean 64.49±8.25). Descriptive data of the studied patients is shown in Table 1.

Table 1: Descriptive data of the studied patients:

Parameters	Mean	SD
Age (years)	64.49	8.25
Systolic blood pressure	121.59	12.42
Diastolic blood pressure	79.15	6.70
BMI	27.34	3.28
Duration of DM (years)	7.24	6.24
FBS	189.98	81.78
HBA1C	8.64	1.84
MDA	5.84	6.56
TAC (mM/L)	1.10	0.40

Reference values: serum TAC 0.5-2mM/L

As regarding the complications of diabetes there were 46 patients suffering from peripheral neuropathy (PN) (56.1%), 22 patients (26.8%) were suffering from retinopathy and 12 patients (14.6%) suffering from nephropathy.

Comparing the MDA and TCA level between patients who presented with complications and patients without, showed no significant differences regarding the neuropathy and retinopathy, while, there was a highly statistically significant

Table 2: Comparison between MDA and TAC levels in diabetic patients with and without complications :

	MDA		TAC	
	Median (IQR)	Z*	Median (IQR)	Z*
PN	6.83 (0.35-9.74)	-0.18	1.13 (0.69-1.325)	-0.28
No PN	3.44 (1.69-7.91)	NS	1.14 (0.96-1.27)	NS
Retinopathy	5.4 (2.97-6.83)	-0.147	1.26 (1.01-1.31)	-0.604
No retinopathy	3.18 (0.5-9.23)	NS	1.13 (0.93-1.29)	NS
Nephropathy	6.47 (1.42-9.12)	-1.826	1.13 (0.96-1.27)	-2.085
No nephropathy	1.305(0.26-3.655)	HS	1.325 (1.1475-1.845)	HS

PN=peripheral neuropathy, Wilcoxon Rank Sum Test

Table 3: Correlation between serum level of MDA and TAC and the anti-diabetic medications :

	MDA		TAC	
	Median (IQR)	H*	Median (IQR)	H*
No anti-diabetic treatment	3.92 (0.74-8.675)	0.18	1.27 (1.13-1.38)	3.744
Oral anti-diabetic treatment	3.44 (1.69-7.26)	NS	1.13 (0.89-1.31)	NS
Insulin	4.69 (0.33-8.3275)		1.03 (0.4775-1.27)	

*Kruskall Wallis Test

difference between patients with nephropathy and patients without nephropathy regarding serum MDA and TAC as shown in Table 2.

There was a non significant correlation between MDA and age, systolic blood pressure, diastolic blood pressure, body mass index, duration of illness, FBS and HbA1c. Similarly no correlation was found between TAC and the above studied parameters.

The MDA in our study showed a negative, yet statistically insignificant, correlation ($r=-0.073$ $p=0.652$) with TAC.

According to the treatment of diabetes the patients were divided into 26 patients who did not receive anti-diabetic treatment, 34 patients on oral anti-diabetic treatment, 20 patients on insulin, and 2 patients received both insulin and oral hypoglycemic. There was no statistically significant difference between the treatment modalities and serum level of MDA and TAC as shown in Table 3.

Discussion

Diabetes mellitus (DM) is associated with endothelial dysfunction and oxidative stress [6]. Chronic exposure to elevated glucose and fatty acid concentrations can cause damage in different types of cells by a variety of mechanisms collectively known as glucolipotoxicity, and oxidative stress may be a common link [7].

In this study, patients with neuropathy have a higher level of MDA in comparison to those without neuropathy although the difference is not statistically significant. This can be explained by the fact that oxidative stress signifies an important pathway in the central nervous system that leads to the damage of both neuronal and vascular cells [8].

Patients with retinopathy display higher levels of MDA in comparison to those without retinopathy although the difference is not statistically significant. This agrees with Vidya et al 2011 who found that the levels of MDA were higher in the diabetics with retinopathy compared to those without retinopathy but the difference is statistically significant ($p < 0.001$) [9].

The results elicited show that patients with nephropathy have a statistically significant higher level of MDA in comparison to those without nephropathy. This agrees with Pan et al. 2010 who found that there was a significant increase in serum malondialdehyde in patients with diabetic nephropathy compared with that of diabetic patients without vascular complications [10].

The explanation for the higher level of MDA in patients with diabetic complications is that oxidative stress plays a major role in the onset of diabetes mellitus, as well as in the development of vascular and neurological complications of the disease [11]. The source of the oxidative stress is a cascade of Reactive Oxygen Species (ROS) which leak from the mitochondria [12]. Hyperglycaemia contributes to micro-vascular complications. The prominent biochemical pathways which explain how diabetes causes damage to the micro-vasculature system include: (1) an increased polyol pathway flux (2) the production of advanced glycation end products (AGE) (3) the generation of reactive oxygen species (ROS) and (4) the activation of the diacyl glycerol and the protein kinase C isoforms [13]. AGEs are the products of glycation and oxidation and they are responsible for the liberation of superoxide radicals. This is supported by the results of this study as all participants had elevated FBS and HbA1c (mean 189.98 ± 81.78 , mean 8.64 ± 1.84).

Patients with nephropathy showed a statistically significant lower level of TAC in comparison to those without nephropathy. This agrees with Pan et al. 2010 who found that antioxidant markers significantly decreased in patients with diabetic nephropathy compared with those in patients without nephropathy [10].

Thus the reason for increased MDA levels in DM complications may be due to increased reactive oxygen products and decreased antioxidants levels. Insufficient neutralization of free radicals by antioxidants causes oxidation of lipids, proteins, nucleic acids, glycolipids and glycoproteins which account for the diabetic complications [14].

In the current study, there is a negative correlation between FBS, HbA1c and TAC ($r = -0.153, -0.138$ respectively $p > 0.05$). This agrees with Peerapatdit et al. (2006) who found that vitamin-C which is an antioxidant, showed a slightly negative correlation ($r = -0.304, p > 0.05$) with HbA1c, which can be explained by the fact that hyperglycemia decreases vitamin-C levels and antioxidant levels [15].

The results also showed a positive correlation between MDA and FBS, HbA1c ($r = 0.153, 0.146$ respectively $p > 0.05$). This agrees with Nourooz-Zadeh et al. (1997) who found a positive correlation between the MDA level and indices of glycaemic control [16]. On the other hand, several other studies have failed to do so [17, 18].

The MDA in this study showed a negative correlation ($r = -0.073, p = 0.652$) with TAC. This agrees with Rema et al. (1995) who found that MDA showed a negative correlation ($r = -0.69, p < 0.001$) with vitamin-C, but the difference is statistically significant which states increased lipid peroxidation is due to decreased antioxidant vitamin-C levels [19].

The FBS, HbA1c in this study were elevated in diabetic patients (mean $189.98, 8.64$) which indicated uncontrolled diabetes and mean duration of DM was $7.24 \text{ years} \pm 6.244$. Thus we can conclude that the poor glycaemic control and the long duration of diabetes can contribute to the increased oxidative stress in diabetic patients.

It is evident from the results that hyperglycemia is linked to increased oxidative stress in diabetic patients. It is the hyperglycemia in the DM causing TAC levels to decrease. This agrees with Doupis and Veves (2007) who found that antioxidant levels decrease in diabetic patients with increased oxidative stress and so it is decreased neutralization of oxidant levels that is causing the lipid peroxidation and causing the rise in MDA levels in the serum [20].

The rise in serum MDA indicates the stress of oxidants on the plasma lipids. Thus the increase in lipid peroxidation product (MDA) in blood is associated with weakness of the defense antioxidant system in diabetes [21].

In this study patients on insulin therapy have the higher level of MDA and the lower level of TAC in comparison to the other two groups but the difference is not statistically significant which may be due to the bad quality of control since the patients are reluctant to use insulin therapy and are obliged only to use it when their general condition deteriorates, or due to the fact that all our patients don't use intensive therapy for fear of hypoglycemia which provides less tight control of DM.

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Needs of the Destitute Elderly of Bangladesh: A Sociological Inquiry

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ABSTRACT

Bangladesh is one of the poorest densely populated least developed countries in the world, having about 10 million older people. Traditionally the older people were respected as a source of wisdom by the young generation in our country. Family and family related institutions like caste system, kinship system etc. performed a vital role to minimize the needs of elderly. But due to the technological advancement, these systems are not functioning properly. As a result, the elderly people are becoming mistreated. Even they cannot properly cope with the new changes in the social, political, cultural aspects and face the vulnerable situation to satisfy their different needs. The present article is based on the empirical study that intends to look into the needs of the elderly people of Bangladesh.

Key words: Needs, the Destitute Elderly, Bangladesh

1. Introduction

Bangladesh, like other developing countries, has been experiencing an increase in the elderly population. The proportion of older people in Bangladesh has been rising more rapidly than other groups. The declining mortality among infants and children and the increasing life expectancy and longevity in Bangladesh are changing the structure of the population. The percentage of elderly population, i.e., over 60 years of age, has increased in Bangladesh and this trend is expected to continue. Historically, the old people were respected as a source of wisdom. In the past, old age was associated with virtues, knowledge and social solidarity. The traditional family value system, i.e. family care for older people, is gradually disappearing. With the increasing age, the elderly cannot properly cope with the new changes and their social, political and cultural aspects. Even they perceive some fundamental special needs. The new generation does not care about their needs (Hossain, 2008:87). As a result, it creates different types of problems, for them as well as for the society. This study was carried out to focus on the needs or problems of the destitute elderly living in Bangladesh. Physical, health, emotional, housing and social needs/problems of the destitute elderly are described in this study.

2. Objective and Methodology

The main objective of this study was to explore the needs of the destitute elderly of Bangladesh. Both quantitative and qualitative methods were followed to satisfy the study objective. Primary data were collected through interviews of 139 destitute elderly who live in the specialized institution named 'Old & Child Rehabilitation Center' at Gazipur and 144 destitute elderly who live with family and receive 'Old Age Allowance (Boishko Bhata)' from the adjacent area of institution. All the respondents were selected with the help of multi-stage and purposive sampling procedure. Relevant secondary data were collected from different research reports, books, journals, newspapers etc.

3. Discussion and Findings

3.1. Physiological Needs

Physiological needs refer to the needs which are essential for human existence. Maslow has mentioned this need, as "deficiency needs". This need begins from the mother's womb for the human child. From then, special care like improved diet, fruits, sufficient rest, mental peace etc. is needed for the pregnant mother to fulfill the physical need of the child. Prenatal

Food Item	Settings				Total	
	Institution		Family			
	Number	Percentage	Number	Percentage	Number	Percentage
Rice	138	99.2	138	95.8	276	97.5
Vegetables	102	73.4	100	69.4	202	71.4
Pulse	132	94.9	26	18.1	158	55.8
Bread	127	91.4	27	18.8	154	54.4
Fish	53	16.6	60	41.7	113	39.9
Egg	5	3.6	13	9.0	18	6.4
Milk	-	-	10	6.94	10	3.5
Meat	-2	1.4	5	3.5	7	2.5
Biscuit	9	6.5	-	-	9	3.2
Banana	-	-	4	2.8	4	1.4
Others	23	16.6	18	12.5	41	14.5
Total	591* (N=139)		401* (N=144)		992* (N=283)	

*Multiple responses

Table 1: Food Items Taken Yesterday by the Destitute Elderly by Settings

Opinion of Elderly	Settings				Total	
	Institution		Family			
	Number	Percentage	Number	Percentage	Number	Percentage
Sufficient	93	66.9	44	30.6	135	48.4
Insufficient	46	33.1	100	69.4	146	51.6
Total	139	100.0	144	100.0	283	100.0
Chi-Square	Value=37.42		DF=1		Significant= 0.000	

Table 2: Opinion of the Destitute Elderly about Food Taken by Settings

Needs for Clothes	Settings				Total	
	Institution		Family			
	Number	Percentage	Number	Percentage	Number	Percentage
Yes	44	31.7	109	75.7	153	54.1
No	95	68.3	35	24.3	130	45.9
Total	139	100.0	144	100.0	283	100.0
Chi-Square	Value= 55.2		DF=1		Significant=0.000	

Table 3: Whether the Elderly Have Need of Clothes or Not by Settings

care, infant welfare services, health care, and a more adequate distribution of medical care -- all are needed continuously not only for man's physical welfare but also for his psychological well-being (Towle, 1965: 7). Proper human development depends on the proper fulfillment of physical need, especially food. So it can be said that food as a basic physical need is inevitable for the all stages of life such as childhood, boyhood and old age.

3.1.1. Need for Food

Food is the basic physical need for every body. It is compulsory not only for human beings but also for all creation. Human existence basically depends on the adequate consumption of food. Especially in old age, it is highly important. There is a proverb in the rural Bangladesh—"Harhi Bai Naoone, Burha Bai Khaowne" (Cooking pot [earthen] sustains on smearing and elderly people sustain on feeding). It indicates that most of

the elderly need proper food to survive. The destitute elderly were asked about their last day's food (as the date before data collection). The elderly living in institutions reported that they maintained their food list regularly. They have the specific food list that has been followed by the authority of institution. On the other hand the elderly living with family have no such list but they take some nutrient food on an irregular basis. The food items that were taken yesterday by the elderly are presented in Table 1.

The elderly living in institutions are more satisfied than the elderly living in family as regards their daily food. The majority (66.9 percent) of destitute elderly living in institutions reported that they got sufficient food as per their need compared to only 30.6 percent of destitute elderly living with family (Table 2).

The authorities of the old age institution are supposed to provide sufficient food everyday. However, it is mentionable that about one third (33.1 percent) of the destitute elderly living in institutions expressed that the food they are taking is insufficient. It appears that the institution authority took special care about the food provided to the inmates. On the other hand more than two thirds (69.4 percent) of the destitute elderly living in family opined that they are not having sufficient food (Table-2). Findings clearly reveal that in terms of food needs of the destitute elderly there is a difference between the destitute elderly living in family and institutions. More destitute elderly living in institutions have sufficient food compared to the destitute elderly living with family. The difference is statistically significant as the chi-square value is 37.42 with 1 degree of freedom.

3.2. Social Needs of the Elderly

A human child comes into the world as a biological organism. Gradually he feels some needs that are fulfilled by the society and convert them to a social being. The society determines the status of the person whether they be a child, young, adult or old man. As a whole, it can be said that everybody has to fulfill some basic social needs from the very beginning to the end of their life which assists them to survive in the society with social prestige, honor and status. According to Kingsley Davis, these societal needs may be classified into four categories - the needs for population, the needs for specialization, the needs for solidarity and the needs for reproduction (Rao, 2006:96). Besides these, there are some special social needs like those of the people in their old age. Social needs of destitute elderly are;

3.2.1. Need for Clothing

Clothing is one of the basic social needs of the people in the world. Clothing helps the human child to preserve their secret organs and contaminated diseases. With the realization of importance of clothing as a basic need, it has been enshrined in the Constitution of Bangladesh. Article 15 of the Constitution expresses "It shall be a fundamental responsibility of the State to attain through planned economic growth, a constant increase of productive forces and a steady improvement in the material and cultural standard of living of the people, with a view to securing to its citizens (a) the provision of the basic necessities of life, including food, clothing, shelter, education and medical care" (GOB, 1994:12). Since the various cells of the human body deteriorate during old age, elderly need special clothing to protect them from different natural calamities. An American Sociologist Brannon has pointed out the following special features of the elderly clothing that are generally accepted by the elderly; (i) larger opening to accommodate added neck fullness and forward head position (ii) V-necklines offer greater comfort to the neck area, especially when leaning forward (iii) full center/front openings promote easier dressing and undressing (iv) light weight yet warm fabrics are usually preferred because of seniors' increased sensitivity to cool temperatures (v) soft and smooth textures that are easy to care for are often easier to pull on and handle (vi) shoes could be comfortable, lightweight and easy to pull on (vii) trousers should have more wearing ease (Brannon, 1982: 45). The usual dress of Bangladeshi male people is cotton made lungi (a skirt type), shirt, genji (under

shirt), gamcha (napkin), chador (scarf), sandal, sweater, etc and females sharie, blouse, petticoat, chador (scarf), sandal etc.

The elderly are not able to fulfill their proper need of clothing in their old age due to their economic insolvency. They feel more need of clothing during the elderly years. In response to my query regarding clothing, it is seen that more than fifty percent (54.1 percent) of elderly have clothing needs and 45.9 percent elderly don't have need of clothes (Table 3).

If setting is considered, it is found that in terms of necessary clothing there are more (75.7 percent) of needy destitute elderly living in family compared to the destitute elderly living in institutions (31.7 percent). The difference is seen between the destitute elderly living in institutions and the destitute elderly living in family in their clothing needs. This difference is statistically highly significant as chi-square value is 55.2 with degree of freedom 1 and significant 0.000. If inadequacy of clothing is considered as a mark of destitution, it can be said that the destitute elderly living with family are more destitute than the destitute elderly living in institutions in terms of clothing needs.

3.2.2. Need for Shelter

Shelter is one of the basic social needs for every individual. Shelter means a settled environment or housing arrangement to live in. The housing is such type of arrangement in which the human child is born, reared and learns the socialization process naturally. It is a stable unit which helps in formatting attitudes of loyalty, sympathy, goodwill, cooperation and judgment (Sarker, 2001:173). So a livable house is a highly important matter to the people. In general sense, a house is considered as a house on the basis of using materials of making wall, roof and floor. Information was collected from the destitute elderly in this matter. As the elderly living in institutions at present do not have any house now they have mentioned the housing condition where they lived before coming to the institution.

3.2.2.1. The Floor of the House of the Elderly

Floor is an important part of a house. Both destitute elderly residing in institutions and with family were asked about the material used in the floor of their house. Most of the elderly (68.3 percent) living in institutions answered that the floor of their house was made of mud. This is followed by 17.3 percent made of brick and 7.9 percent made of concrete. 6.5 percent elderly living in institutions had no permanent house at all, i.e., they were rootless. On the other hand, most (93.1 percent) of the elderly residing with family have replied that the floor of their house is made of mud. The rest (6.9 percent) of the elderly living with family have replied that the floor of their houses is made of brick and concrete (Table-4). No elderly was found homeless in the family setting. In this consideration, it can be said that the floor of the house of the elderly residing in institutions was better than the elderly residing in family even if the previous condition of floor before coming to this institution is considered.

Parts of House	Materials	Settings				Total	
		Institution*		Family*		Number	Percentage
		Number	Percentage	Number	Percentage		
Floor of the House	Mud	95	68.3	134	93.1	229	80.9
	Brick	24	17.3	6	4.2	30	10.6
	Concrete	11	7.9	4	2.8	15	5.3
	Other	9	6.5	-	-	9	3.2
	Total	139	100.0	144	100.0	283	100.0
Wall of the House	Mud	38	27.3	97	67.4	135	47.7
	Bamboo Branch	11	7.9	8	5.6	19	6.7
	Jute stick	15	10.8	7	4.9	22	7.8
	Thatch	6	4.3	10	6.9	16	5.7
	Mat	2	1.4	2	1.4	4	1.4
	CGI Sheet	44	31.7	12	8.3	56	19.8
	Brick	15	10.8	7	4.9	22	7.8
	Other	9	6.5	-	-	9	3.2
Total	139	100.0	144	100.0	283	100.0	
Roof of the House	CGI sheet	85	61.2	115	79.9	200	70.7
	Thatch	34	24.5	25	17.4	59	20.8
	Polythene	4	2.9	3	2.1	7	2.5
	Concrete	7	5.0	1	0.7	8	2.8
	Other	9	6.5	-	-	9	3.2
	Total	139	100.0	144	100.0	283	100.0

*The description of the house has been narrated above the table as to where the elderly lived before coming to the institution and where the elderly of family reside at present.

Table 4: Types of House of the Destitute Elderly by Settings

Whether Suffer from Disease	Settings				Total	
	Institution		Family		Number	Percentage
	Number	Percentage	Number	Percentage		
Yes	101	72.7	123	85.4	224	79.6
No	38	27.3	21	14.6	59	20.8
Total	139	100.0	144	100.0	283	100.0

Table 5: Whether the Elderly Suffer from Diseases by Settings

Diseases of Elderly	Settings				Total	
	Institution		Family		Number	Percentage
	Number	Percentage	Number	Percentage		
Gastric	73	72.3	81	65.9	154	68.8
Poor eye sight	40	39.6	50	40.7	90	40.8
Arthritis	8	7.9	40	32.5	48	21.4
Blood Pressure	21	15.1	15	10.4	36	12.7
Asthma	11	7.9	19	13.2	30	10.6
Paralysis	12	8.6	14	9.7	26	9.2
Diabetics	6	4.3	18	12.5	24	8.5
Cancer	-	-	1	0.7	1	0.4
Others	3	3.0	5	4.1	8	3.6
Total	174* (N=101)		243* (N=123)		417*(N=224)	

*Multiple responses

Table 6: Health Condition of the Destitute Elderly by Settings

3.2.2.2. Wall of the House of the Elderly

A well-protected house means a well-protected wall and roof. As a part of the house, wall protects the people from the cold weather, cyclones and rainfall. House wall of the highest proportion (31.7 percent) of the elderly living in institution was made of CGI sheet. This is followed by 27.3 percent made of mud, 10.8 percent made of brick, 10.8 percent made of jute stick, 7.9 percent made of bamboo branch, and 4.3 percent made of thatch (Table-4). On the other hand, most (67.4 percent) of the elderly living with family, dwell in such types of houses where the walls of those houses are made of mud. This is followed by 8.3 percent made of CGI sheet, 6.9 percent made of thatch, 5.6 percent made of bamboo branch, 4.9 percent made of jute stick, and 4.9 percent made of brick.

3.2.2.3. Roof of the House of the Elderly

The roof is a vital part of a house. Without a roof a house is unthinkable. Again I asked of the elderly about the roof of their house. Both the elderly dwelling in institution and family possess almost the same characteristics in respect of housing. Most of them (61.2 percent of the destitute elderly living in an institution and 79.9 percent of the destitute elderly living in family) used to live in a house with mud floor and CGI sheet roof because these are less expensive. Among the rest of the destitute elderly living in an institution, 24.5 percent, 5.0 percent and 2.9 percent had (before coming here) the house roof made of thatch with, concrete, and polythene. Among the rest of the destitute elderly living with family are living in a house with roof made of thatch (17.4 percent), polythene (2.1 percent) and concrete (0.7 percent). It appears that most of the elderly lived in houses constructed at minimum cost.

It can be commented that the destitute elderly living in institutions lived in a better house than the elderly residing with family at present. The elderly dwelling with family feel comforted by live with family having various difficulties in their houses. But the elderly in institutions were compelled to come here having no good shelter with their family.

3.2.3. Need for Health and Medical Care

Health care is a fundamental right of the people. Health means the soundness of body and mind, a state of dynamism and vitality that permits one to function effectively physically, psychologically and socially (Nevid, 1998:5). The World Health Organization defines health as: A conception of health is the extent to which an individual or group is able on the one hand to realize aspirations and satisfy needs, and on the other hand to change or cope with the environment (WHO, 1984:21). Since old age is associated with more dependency and is concomitant with other related diseases, the elderly profoundly need health care. The general common diseases of the elderly are arthritis, rheumatism, blood pressure, eyesight problem, forgetfulness, and so on, all over the world (Comfort, 1976:88). Bangladesh's Association of Aged and Institute of Geriatric Medicine (BAAIGM) had conducted a comprehensive study on the elderly of Bangladesh. The study report indicates ill health as the main problem of the elderly in Bangladesh. Blood pressure, Arthritis, Diabetes, Eyesight problem, Gastric problems are found as the common diseases of the elderly from this study (BAAIGM, 1988: 23). Generally we think age itself is a

disease and the elderly bear many germs of diseases. From this idea, I tried to know whether the elderly suffer from disease or not.

The maximum elderly (79.6 percent) answered that they suffer from diseases. It is mentionable that 20.8 percent elderly are not suffering from diseases. It bears a good sign. In spite of being elderly they are free from disease and good in health condition. If setting is considered it is seen that the elderly living with family (85.4 percent) are sicker compared to the elderly living in an institution (72.7 percent). So it is to be commented that the elderly living with family are more vulnerable than the elderly living in institutions in terms of sickness.

It is obvious that the elderly become more and more susceptible to chronic diseases. As age advances, due to deteriorating physiological conditions, the body becomes prone to illness. The illnesses of the elderly are multiple and chronic in nature. The majority, about 68.8 percent of elderly, mentioned that they suffer from gastric problems (Table 6).

Since the elderly have a low economic profile, they cannot eat food properly. They take food irregularly and sometimes they do not take a meal. As a result the diseases that largely affect them are gastric. An elderly person justified his physical condition:

“Ovaber Shangshar, thik somai bhat khaite parina, Tai jakhane bhat khai, tahoni Chukka dhekur othe abong gash hai” (It is a poverty stricken family. That is why, I cannot have my meal at the right time and I am to starve most of the time. I feel suffocated due to respiratory problems while taking meal. That means he is suffering from gastric conditions).

The next mentioned disease (40.8 percent) by which the elderly suffered is poor eyesight. The prevalent diseases by which the elderly have been suffering are diabetes (8.5 percent), blood pressure (12.7 percent), paralysis (9.2 percent), Asthma (10.6 percent) and cancer (0.35). 19.9 percent elderly mentioned that they have suffered from other diseases. Others include chest pain, shortness of breath, difficulty in movement, prolonged cough, forgetfulness, etc. (Table 6). The usual diseases, which the elderly suffer, have been explored by the present study.

The health care system at various levels in Bangladesh is designed for the general population. As an important section of population, the elderly remain outside of the general health care system. Until now, the needs of the elderly have not been considered to be a major issue in Bangladesh. The country has neither separate health care provision nor infrastructure for the elderly. There is only one non-government organization (BAAIGM) in the country that explicitly addresses the health problems for this particular section of the population on a limited scale (Kabir and Siddiqua, 2003:116). I interviewed two categories of elderly on the basis of residential settings. Differences are clearly manifest between these two settings. The elderly residing in an institution are provided with all the facilities for their health care. A residential doctor has been appointed by the authority in an institution for providing health care services to the elderly. He is familiar with the elderly as the institution's doctor. Almost all of the

Sources of Treatment	Settings				Total	
	Institution		Family			
	Number	Percentage	Number	Percentage	Number	Percentage
Institution's Doctor	87	86.1	-	-	87	38.8
Village Physician	-	-	36	29.3	44	19.6
Private Clinic	08	7.9	29	23.6	37	16.5
Govt. Hospital	05	5.0	29	23.6	34	12.0
Kabirazi	-	-	25	20.3	25	11.7
Homeopath	1	1.0	4	3.3	5	2.2
Total	101	100.0	123	100.0	224	100.0

Table 7: Sources of Treatment of the Destitute Elderly by Settings

Nature of Activities for Recreation	Settings				Total	
	Institution		Family			
	Number	Percentage	Number	Percentage	Number	Percentage
Gossiping	94	68.3	101	70.1	195	68.9
Roaming	98	70.5	60	41.7	158	55.8
Sleeping	126	90.6	18	12.5	144	50.9
Engage in Religion	120	86.3	17	12.2	137	48.4
Watching TV	51	36.7	08	5.6	59	20.8
Reading Newspaper	17	12.2	04	2.8	21	7.4
Reading Book	14	10.1	03	2.1	17	6.0
Playoffs	4	2.9	10	6.9	14	4.9
Others	2	1.4	4	2.8	6	2.1
Total	526* (N=139)		225* (N=144)		751* (N=283)	

* Multiple responses.

Table 8: How the Elderly Pass Their Leisure Time by Settings

Whether Spouse Alive	Settings						Total
	Institution			Family			
	Male	Female	Total	Male	Female	Total	
No	32 (50.0)	49 (79.0)	81 (64.3)	25 (35.2)	62 (88.6)	87 (61.7)	168 (62.9)
Yes	32 (50.0)	13 (21.0)	45 (35.7)	46 (64.8)	8 (11.4)	54 (38.3)	99 (37.1)
Total	64 (100.0)	62 (100.0)	126 (100.0)	71 (100.0)	70 (100.0)	141 (100.0)	267 (100.0)

*Figures within the parentheses indicate percentage.

Table 9: Whether the Spouse of the Elderly is Alive by Gender and Settings

Situation of Status	Settings				Total	
	Institution		Family			
	Number	Percentage	Number	Percentage	Number	Percentage
Increased	11	7.9	21	14.6	32	11.3
Decreased	100	71.9	74	51.4	174	61.5
Remain same	28	20.1	49	34.0	77	27.2
Total	139	100.0	144	100.0	283	100.0

Table 10: Situation of the Status of the Elderly by Settings

elderly (86.1 percent) of this setting take medicine and other supportive health services from the institution's doctor. Very insignificantly the elderly living in institutions took health services from outside, such as government hospital (5.0 percent), private clinic (7.9 percent) and homeopathic doctor (1.0 percent) under the responsibility of the institution's authority. They need such treatment for their acute problems.

On the other hand, destitute elderly living with family, are suffering highly from different diseases. As such they badly need proper medical services. It is evident that mostly they take treatment from many sources. More than fifty percent (52.9 percent) of the destitute elderly living with family receive medical services from traditional sources like kabiraz (herbal), village/quack doctor and homeopathic. Nearly half of the destitute elderly living with family (47.2 percent) take modern treatment. It is to be mentioned that a good number of private clinics are there in Joydevpur, a famous extended area of the capital city Dhaka, Bangladesh that is located in Upazila. So, in spite of being economically distressed, they can avail the government and private health facilities from this locality. It is evident that more than 79.6 percent destitute elderly have been suffering from multiple diseases and they have availed themselves of medical facilities from different sources (Table 7). So, it can be said that the elderly of the study area are vulnerable in the need of health care and medical facilities.

3.2.3. Recreational Needs

Recreation is a fundamental right of a human being. It is a non-work activity in which a man is engaged in for pleasure. Recreational activities are often culturally and socially structured and within a culture people tend to want to engage in similar recreational activities (Sharma, 1992:773). It is generally accepted to all that proper recreational facilities can protect everybody from the different kinds of harm. The elderly have witnessed a wide array of changes over their lifetime and want to share with the new generation (Daly and Connor, 1984:104). There is a formal recreational arrangement like sports, cultural clubs, and play grounds for the older people in modern society. But, in our country, most of the elderly are deprived of formal recreational facilities. That is why I wanted to know how the elderly pass their leisure time. Data reveals that the highest proportion of the elderly (68.9 percent) either living in institution or with family, enjoy gossiping as a recreation with their neighbours, age mates and their grandchildren. But differences in nature of recreational activities are seen between the elderly living in institution and the elderly living with family. According to the frequency of responses of the elderly residing in institutions, the major forms of recreation or passing leisure time are sleeping (90.6 percent), doing religious rituals (86.3 percent), roaming (70.5 percent), gossiping (68.3 percent), watching TV (36.7 percent), reading newspaper (12.2 percent) and reading book (10.1 percent). Some cases are found whereby they pass their time in other ways. Other includes that reading the holy book, singing songs, going to the market, going to the cornfield and reciting poems (Table 8).

On the other hand, the elderly residing with family pass their time mostly in gossiping (70.1 percent) as a means of recreation. This is followed by 41.7 percent elderly in the family

passing their time roaming, 12.5 percent sleeping, 12.2 percent doing religious rituals, 5.6 percent watching TV, 2.8 percent reading newspaper and 2.1 percent reading book. 6.9 percent elderly have mentioned that they pass their time in other ways. Other ways include reading the holy book, singing songs, going to the market, going to the cornfield and reciting poems. On review of the above situation, it can be said that the elderly people either residing in institution or with family, pass their time in the same ways like gossiping, sleeping, doing religious rituals and so on. But they have also reported as a complaint that they cannot talk with the young properly about the history of their life. The young people regret the elderly's conversation. An elderly person expressed his view regarding this matter as following:

'Baba, amader kono dam nai, kata kaite vallagay kintu keaw kata hunae na' (Oh my son! We have no value. We feel better to speak with others but no body hears our word and they have no time for conversation).

3.3. Psychological Needs of the Elderly

Another need that is required by everybody is psychological need. It is an important part of human development. A balanced human development requires psychological and physiological maturation. It signifies accomplishment of mental (acquisition of skills etc.), emotional (development of attitudes etc.) and social (adaptation to family and society etc.) abilities (Islam, 2005:6). The degree of bondage of an individual in the form of attachment, commitment, involvement and belief to the society largely determines the nature of behavior and indicates the emotional development of the person. Emotional needs are attached with infancy, childhood, adolescence, adulthood, old age and throughout the whole life cycle. But at old age this need is felt severely. Emotional/psychological needs that are seen in the elderly stage are;

3.3.1. Need for Companionship

Men everywhere live in a group environment. A completely separated or isolated individual is purely hypothetical; because man's daily life is made up largely of participating in association. Without association of human beings, our life becomes boring and unbearable. From the beginning of our life, we get the peer group, friend, classmate, age mate as company. After the adolescent stage, we need the opposite sex as company. As a result we marry and continue our conjugal life up to death as a company. This type of companionship is badly needed in the old age. The study reveals that most of the destitute elderly (62.9 percent) are passing their present days without such companionship due to death of their spouse. The rest, 37.1 percent of elderly are passing their present days with such companionship (Table 9).

It is seen that a mentionable portion of elderly have no spouse which leads to loneliness, depression and frustration of the elderly. Besides this the elderly cannot exchange their views to others easily and properly due to the generation gap. Generally, young people do not pay proper attention to the elderly for their business. Most of the elderly feel bored due to lack of suitable company. So, they need special care either from the organized institution or family.

Care Giver	Settings				Total	
	Institution*		Family*			
	Number	Percentage	Number	Percentage	Number	Percentage
Neighbor	62	44.6	32	22.2	94	33.2
Daughter	33	23.7	40	27.8	73	25.8
Son	20	14.4	44	30.6	64	22.6
Others	38	27.3	19	13.2	57	20.1
Daughter in law	12	8.6	9	6.3	21	7.4
Son in law	4	2.9	13	9.0	17	6.0
Wife	3	2.2	5	3.5	8	2.8
Husband	2	1.4	2	1.4	4	1.4
Total	173** (N=139)		164** (N=144)		338** (N=283)	

* **Multiple responses.

*The elderly living in institutions mentioned the name of their previous caregiver and elderly residing with family mentioned such caregivers who help the elderly at present.

Table 11: From whom the Elderly gets help to meet their Needs by Settings

Opinion of the Elderly	Settings				Total	
	Institution		Family			
	Number	Percentage	Number	Percentage	Number	Percentage
Yes	46	33.1	96	66.7	142	50.2
No	93	66.9	48	33.3	141	49.8
Total	139	100.0	144	100.0	283	100.0

Table 12: Whether the Children and Relatives of the Elderly have contact with them

Nature of Contact	Settings				Total	
	Institution		Family			
	Number	Percentage	Number	Percentage	Number	Percentage
Always	1	0.8	30	21.3	31	11.6
Sometimes	45	35.7	66	46.8	111	41.8
No Contact	93	66.9	48	33.3	141	49.8
Total	139	100.0	144	100.0	283	100.0

Table 13: Nature of Contact with the Children or Relatives of the Elderly

3.3.2. Need for Social Status

Society is understood in terms of the network of social interaction and interconnection. Because everyone has his/her own separate identity, even before entering the social situation. This identity refers to his/her position or status that is highly connected with psychological or emotional matters. In fact, some sociologists consider social status as an individual's ranking in a system of social stratification (Bassis, et al, 1998:291). During old age, the elderly are very conscious of their self-respect or status and if something goes against their status, they react instantly. Even the elderly react with anger and keep themselves from meals. The elderly think that they have no status to the young generation. They feel that their traditional role and status has been eroded. As a result, they have a low self-image in terms of their usefulness and contribution to the community (Daly and O'Connor, 1984:105). The elderly were asked whether their status has increased or decreased or remained the same at present compared to their young age. More than half (61.5 percent) of the destitute elderly have reported that their social status and respect have decreased. They have mentioned responsible causes

are ignorance by the family members, declination of economic conditions, and no consultation of the family members about taking decisions and deserted by spouse, are decreasing their status. About more than one fourth of the elderly (27.2 percent) have responded that they enjoy the same status and respect that they had earlier. All members of this group have mentioned themselves as very active in economic, social, and household activities and family life. 11.3 percent of elderly have reported this has increased their social status, pointing to tradition, experience and wisdom as the cause (Table 10). To substantiate their claims they argued that people frequently come to them seeking suggestions, call them for resolving conflict, and request them to participate in community development activities like committee of Madrasah, Masjid, Eidgah etc. One of them expressed his view:

"Tumi Bhujhana, Amare Prosno Karo, Bura Lokair Keao Dam Daie, Atoab Amar Abar Mantobbo Kee" (An elderly person become furious and reported whether I did not understand that nobody gives any value to an elderly. He further added that he did not have anything to say regarding this).

From the above findings, it becomes evident that with some exceptions more than fifty percent of elderly perceive dissatisfaction about their status and they think the traditional sociability has died. The elderly interviewed feel that they themselves have little contribution to society. This view reflects, as they see it, society's attitude towards the elderly, especially that of the young: young people are seen as having neither time for nor a genuine interest in them. As a result, the elderly think that they have a low self-image in terms of their usefulness and contribution to the community.

3.3.3. Need for Care Giver

Care from others is an important need of the elderly. Care means to get help from others to deal with the problems of daily life. At the elderly stage, help is badly needed for conducting their daily activities. Traditionally, the elderly received care and support from children and community people. To assess the real situation, the elderly were asked who gives support in case of their need of daily life. The elderly living in institutions (old home) at present receive all the care facilities from the institutional arrangement. So, they have mentioned their previous (before coming to institution) care arrangement system and the elderly living with family at present, mentioned the existing care arrangement system.

The highest proportion (44.6 percent), of the destitute elderly living in institutions had received support from community like neighbours, others (27.3 percent). Other means were the religious leader, employment authority, and other distant relatives. The rest of the destitute elderly living in institutions received help from 14.4 percent, son, 23.7 percent daughter, 2.2 percent wife, and 1.4 percent husband. The destitute elderly living with family, during their needs, all family members take care of them. Most of the destitute elderly living with family received help from their son (30.6 percent) and daughter (27.8). They have also reported that usually they get help from the neighbour (22.2 percent), wife (3.5 percent), and husband (1.4 percent), daughter in law (6.3 percent) and son in law (9 percent). It is evident that the daughter and son in law (31.8 percent) are more helpful to the destitute elderly compared to son and daughter in law (30.0 percent) as care givers. In view of above discussion, it may be concluded that the nature of caregiver is almost the same in both settings where the elderly live. Son, daughter, husband, wife, son in law, daughter in law, and neighbour are found as care givers in the old age stage.

3.3.4. Need of Social Contact and Relationship

The term social relationship refers to the relationship that exists among people. We may witness such relationships between father and son, employer and employee, teacher and student, merchant and customer, leader and follower, or between friends and enemies, between children, etc. This relationship is identified as the 'social capital' in modern development issues (Hossain, 2005:1). Social relationship depends mostly on mutual understanding, attachment, faith and empathy. Especially it is highly needed by the elderly. In order to identify the nature of social relationship, the elderly were asked as to whether their children or relatives had contact with them.

It is seen from Table 12 that a higher percentage (66.9 percent) of the elderly living in institution had no contact with their children and relatives compared to the destitute elderly living with family (33.3 percent). Findings indicate that the elderly living in institutions are comparatively worse off than the elderly living with family in this regard. It does not mean that the elderly living with family are not destitute. In spite of having relations or contact with their children and relatives the elderly living with family are also destitute. Further I asked the elderly about the nature of relations/contact with children and relatives.

It is seen from the Table 13 that the highest number, 93 out of 139 (93 or 66.9 percent) of the destitute elderly living in institutions, have no relations with their children and relatives. The rest 0.8 percent and 35.7 percent elderly living in institutions have mentioned that their children and relatives have kept relations with them always, now and then respectively. On the other hand, the highest proportion (46.8 percent) of the destitute elderly living with family has contact with their children and relatives now and then. 21.3 percent of elderly living with family has contact with their children and relatives always. A significant proportion (33.3 percent) of the destitute elderly living with family has no relations with them.

From above, it is evident that the most destitute elderly whether living in institutions or with family have no proper relations with their children or kin relatives. It appears that interaction of the destitute elderly living in institutions or living with family with their children and relatives are not satisfactory. The destitute elderly are deprived of the good and healthy relations or behaviour of their children and relatives.

4. Recommendation and Conclusion

Population ageing is one of the most discussed global phenomena in the present century. It can generally be described as the process of growing old and is an intricate part of the life cycle. Basically it is a multi-dimensional process and affects almost every aspect of human life. The elderly in this context suffer a double burden. But the existing safety net programme, social, economic, health and security programs are unable to solve the problems of the elderly. The main focus of this study is to identify the needs of the destitute elderly, how their problems affect them psychologically, socially and physically. The physical, social, psychological, and recreational needs of the elderly have been identified on the basis of the results of the study. But these needs are not being fulfilled properly under the existing security program of Bangladesh. Some suggestions are being recommended for ensuring the welfare of the elderly; i). To teach morality to the young generation regarding taking care of the needs of older people ii). It is evident from the findings of the study that different needs of the destitute elderly are more effectively met in the institution than in the family. Specially, elderly having no child and shelter are highly satisfied about the institutional services, as they do not have any alternative. So the institutions like OCRC should be established in different parts of Bangladesh under the government initiatives; iii). Interventions are highly required from both the sector of government and non-government level, to meet these needs of the elderly.

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Goldenhar Syndrome: A Case Report

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ABSTRACT

Goldenhar syndrome is a rare congenital anomaly which consists of a triad of an ocular dermoid cyst, preauricular skin tags and vertebral dysplasia; it is associated with anomalous development of the first and second branchial arch. We report a rare case of an infant female born to non-consanguineous parents who presented with limbal dermoid, preauricular skin tag and ear canal atresia.

Key words: Goldenhar syndrome, branchial arch, limbal dermoids, preauricular skin tags

Introduction

Goldenhar syndrome (Oculo-Auriculo-Vertebral (OAV) syndrome); named after Dr. Goldenhar who studied and wrote many things about facial problems) is a rare congenital anomaly consisting of a triad of an ocular dermoid cyst, preauricular skin tags and vertebral dysplasia (1,2). It is associated with anomalous development of the first and second branchial arch (3).

Causes of Goldenhar Syndrome are unknown, but it is thought to be multifactorial, although there may be a genetic component, which would account for certain familial patterns (4). Some cases are caused by prenatal exposure to chemicals, medications, or to high doses of vitamin A, or diseases (diabetes) during pregnancy (3).

Along with the physical examination (which is the first step in the diagnosis of this syndrome), X-ray, Ultrasound, high resolution computed tomography especially for inner ear, middle ear and vertebral defects and magnetic resonance imaging might be helpful in the diagnosis.

Surgical intervention may be necessary to help the child to develop e.g. jaw bone grafts, ocular dermoid debulking, repairing cleft palate/lip, repairing heart malformations, spinal surgery.

The prognosis of Goldenhar syndrome is very good. These individuals typically have a normal life span and normal intelligence.

Case Report

A 6 months old female Libyan infant presented to our clinic in Benghazi Medical Center (Libya) with right sided facial anomalies including the following: limbal dermoid, preauricular skin tag, hemifacial asymmetry, mandibular hypoplasia, and ear canal atresia. (See figures next page)

She was a product of full term normal vaginal delivery (second pregnancy), with no history of neonatal ICU admission. Prenatal history revealed that the mother was generally healthy during pregnancy, except that she was taking omeprazole during the first trimester of pregnancy. There was no family history of birth defects.

The patient was examined thoroughly. Ocular examination revealed a small soft mass of the right eye located in the infero temporal region, not obscuring the visual axis, and otherwise normal. ENT examination revealed preauricular tag, and canal atresia. Systemic examination revealed no abnormalities.



Figure 1: Facial asymmetry with mandible hypoplasia.



Figure 2: Preauricular tag.



Figure 3: Inferotemporal limbal dermoid.

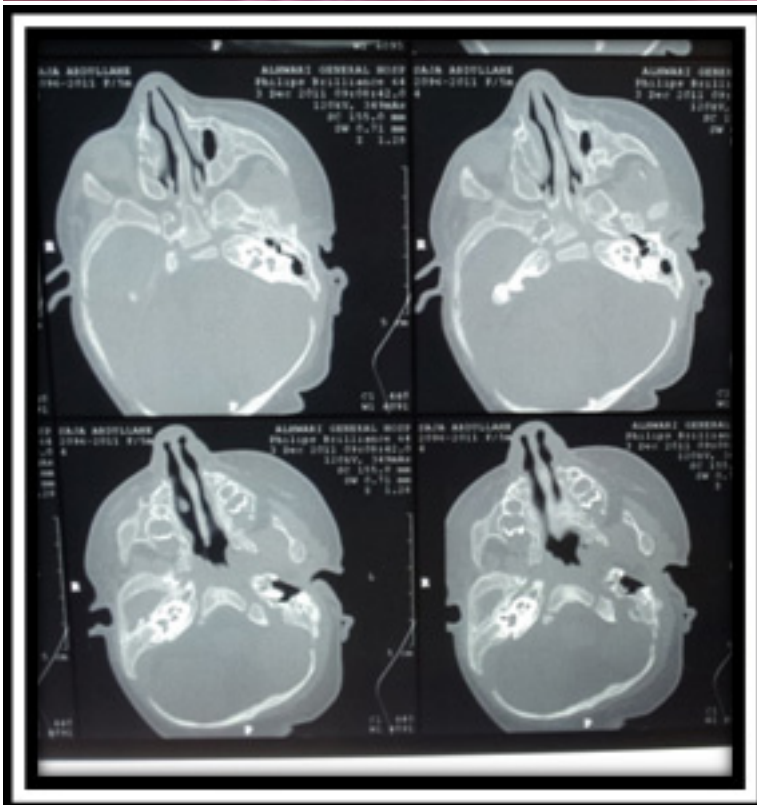


Figure 4: External canal atresia.

Discussion

Goldenhar syndrome is a well recognized developmental disorder involving first and second branchial arches, and is characterized by considerable phenotypic variability. It is proposed to represent a variant of hemifacial microsomia group. It includes hemifacial hypoplasia, oculoauriculovertebral dysplasia and first and second arch syndrome. The involvement is unilateral in 70%-80% of cases.(5)

The following signs may be seen in this syndrome: Limbal dermoids (6) (bilateral in 25% of cases), eyelid colobomas. Preauricular appendages/skin tags, microtia or anotia of external ear, can be associated with hearing loss with or without middle ear malformation (7). Vertebral abnormalities (butterfly vertebrae or hemivertebrae)(8). Congenital heart disease (numerous anomalies have been reported)(9). Central nervous system abnormalities (hydrocephalus, intracranial lipomas, cranial nerve dysgenesis and mental retardation have been described), also urological abnormalities have been reported (10).

A review of the literature showed that Goldenhar syndrome commonly occurs sporadically and there is no sex predilection. Many cases have been reported and most of them showed the same finding with some variations. One of these studies done by Adeoye(11) showed ocular features of Goldenhar syndrome in a 3-day-old Nigerian neonate with right anophthalmos and lipodermoid, left limbal dermoid, although he presented with bilateral preauricular appendages and mandibular hypoplasia. The causative factor might be due to maternal drug (traditional medicine) ingestion at three months gestation (in our case the mother ingested omeprazole during the first trimester of pregnancy).

Another study done by Marc(12) showed narrowing of the external auditory canal in a 3 month old boy with Goldenhar's syndrome who was referred for imaging studies of the temporal bone; he also had cervical vertebral fusion at the C6-C7 level, hemifacial microsomia with microtia, and a preauricular tag. This means that ear and eye anomalies are common in patients with Goldenhar syndrome.

From these studies and ours we noted that ear and eye anomalies (13) are common in patients with Goldenhar syndrome, so children with this syndrome should be assessed for both vision and hearing. The structural anomalies of the eyes and ears in Goldenhar syndrome can be corrected by plastic surgery (14).

Conclusion

Goldenhar syndrome appears to occur randomly with no apparent cause (sporadic). It has multifactorial causes, a genetic component may have a role, or prenatal exposure to chemicals, medications, or high doses of vitamin A. Children with this syndrome should be assessed for both vision and hearing to prevent late complications of this syndrome. They may be subjected to numerous surgeries to correct the jaw and dental abnormalities. Mothers should be well educated about their health during pregnancy, and should have good antenatal care.

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Evaluation of Shoulder Pathologies using MRI - Our experience at King Hussein Medical Centre

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ABSTRACT

This study was conducted to evaluate the findings in shoulder Magnetic Resonance Imaging (MRI) at King Hussein Medical Center.

Methods: This is a retrospective study. All shoulder magnetic resonance imaging at King Hussein Medical Center was done between March 2012 till February 2013 and their reports were reviewed and the results analyzed through the PACS system. A total of 114 patients aged 13-79 years. All presented with shoulder pain.

Results: A total number of 114 patients had shoulder magnetic resonance imaging. 18 patients were reported as normal. 42 patients were found to have acromioclavicular osteoarthritis, which was the most common finding accounting for 36.8%. Varying findings were recorded and analyzed.

Conclusion: Magnetic resonance imaging of the shoulder joint is a common non invasive investigation for shoulder pain that can detect many shoulder abnormalities; the most common abnormality found at our study was acromioclavicular osteoarthritis.

Key words: Shoulder, Magnetic Resonance Imaging

Introduction

The shoulder joint is a synovial ball and socket joint and involves articulation between the glenoid fossa of the scapula and the head of the humerus. It is the most mobile joint of the human body and is exposed to a wide range of pathologies.

Shoulder pain is a common complaint and it affects all age groups. A wide range of causes are responsible for shoulder pain; traumatic, inflammatory and degenerative. While X-ray is helpful in traumatic causes to rule out fracture and dislocation, it is still limited in diagnosing the complications and joint abnormalities. MRI is the noninvasive modality commonly used for diagnosing the majority of shoulder pathologies including bone, muscles, ligaments and soft tissues. There is no radiation risk and it provides a multiplanar views.

In some cases, especially in diagnosing labral injuries MR arthrography where contrast material is injected into the joint or arthroscopy is needed, but it is an invasive investigation and has more complications in comparison with MRI.

This study was conducted to evaluate the findings in shoulder magnetic resonance imaging at King Hussein Medical Center.

Materials and Methods

This is a retrospective study done on all patients having shoulder MRI examination at King Hussein Medical Center between March 2012 till end of February 2013.

One hundred and sixteen studies were reviewed on PACS; two patients were excluded because of suboptimal images due to motion artifacts. 114 patients were included in this study. Ages ranged from 13 to 79 patients with a mean age of 38 years. There were 77 males and 37 females with a male to female ratio of 2:1. All studies were conducted on either 1.5 T symphony Siemens or trio 3 T Siemens MRI machines.

The sequences used are: proton T2 axial, T1 sagittal oblique, T1 coronal STAIR, T1 coronal oblique, T2* coronal and T2 axial fat sat.

Results

Out of the 114 patients, 18 patients were reported as normal. Many patients had more than one finding. The most common finding was acromioclavicular osteoarthritis, found in 42 patients (36.8%). A wide variety of findings were reported; supraspinatous tendinosis in 38 patients (33.3%), joint effusion in 28 patients (24.6%), supraspinatous tear in 25 patients (21.9%) and bursitis in 23 patients (20.2%). Other findings were impingement, subchondral cyst, Bankart tear, Hill-Sachs deformity, infraspinatous tendinosis, SLAP, biceps tenosinovitis, masses, hooked acromion and fracture. (Table 1).

All images and reports were reviewed and the findings were recorded.

Discussion

Shoulder pain is a common complaint of patients. Its accurate diagnosis helps to plan the modality of treatment and whether surgery or intervention is necessary or not. The MRI

Finding	No	%
Acromio-clavicular O.A	42	36.8
Supraspinatous Tendinosis	38	33.3
Effusion	28	24.6
Supraspinatous Tear	25	21.9
Bursitis	23	20.2
Subchondral Cyst	19	16.7
Impingement	18	15.8
Hill-Sachs	8	7
Mass	8	7
SLAPlesion	7	6.1
Biceps Tenosinovitis	5	4.4
Infraspinatous Tendinosis	4	3.5
Bankart	3	2.6
Hooked acromion	1	0.9
Fracture	1	0.9
Normal	18	15.8

N.B The total doesn't add up to 100% because many patients had more than one finding.

Table 1: Shoulder MRI findings in this study.

examination poses almost no risk to the patient when safety guidelines are followed.

Rotator cuff impingement and tears are the major cause of pain in patients older than 40. Shoulder MRI improves the sensitivity and specificity of diagnosing rotator cuff disorders and provides important clinical information that guides patient management(1). Figure 1.

MRI with oblique coronal and oblique sagittal planes is the modality of choice for imaging rotator cuff. It is 84-100% sensitive and 77-97% specific for full thickness rotator cuff tears with the use of additional fast spin echo and fat-suppressed pulse sequences (2-5).

Although acromioclavicular osteoarthritis can be detected on X-Ray, its effect on rotator cuff cannot be appreciated by X-Ray alone, and MRI is necessary. Other degenerative changes such as subchondral cyst are diagnosed by MRI with high sensitivity(6, 7). Figure 2.

Joint effusion is found in association with other pathologies as a reactionary mechanism, and by MRI it could be differentiated from hemarthrosis. Acute bursitis is also a common cause of shoulder pain. Figure 3.

Tendinosis (biceps, supraspinatous and infraspinatous) appears as bright signal (edema) in T2WI indicating acute injury. Sagittal oblique T1WI is the sequence of choice for evaluating fatty infiltration and muscle volume atrophy, which is in favour of a chronic injury(8). Figure 1.

Soft tissue masses are also assessed by MRI, their exact location, extension and relationship; which is important for surgical planning(9). Figure 4.

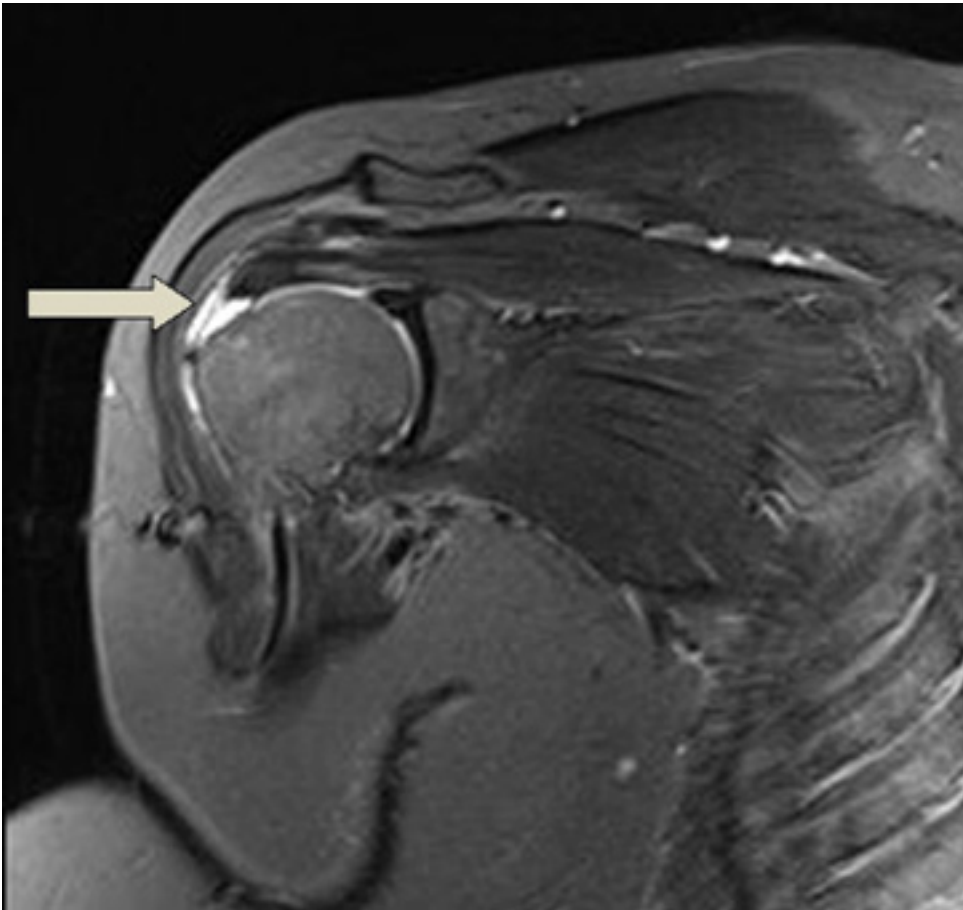


Figure 1: Coronal T2 fat suppression image showing full thickness supraspinatus tear



Figure 2: Coronal oblique T1WI showing OA changes of the acromioclavicular joint resulting in impingement syndrome and supraspinatus and deltoid muscles atrophy

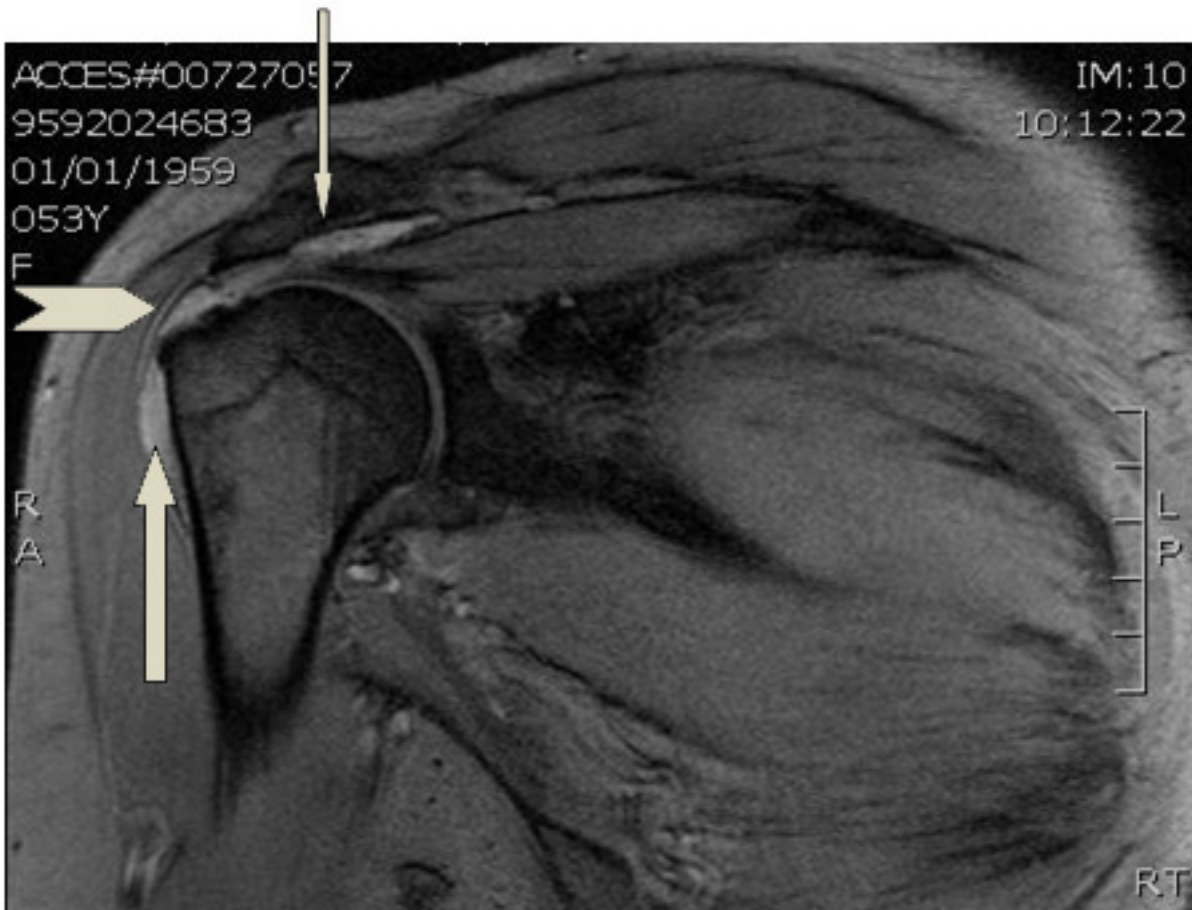


Figure 3: Coronal oblique T2 fat suppression image showing subacromion and subdeltoid bursitis (arrows) and supraspinatus tendinosis (arrow head).



Figure 4: Axial T2WI showing soft tissue (intramuscular) mass in the anterior aspect of the shoulder. Proved to be hemangioma.

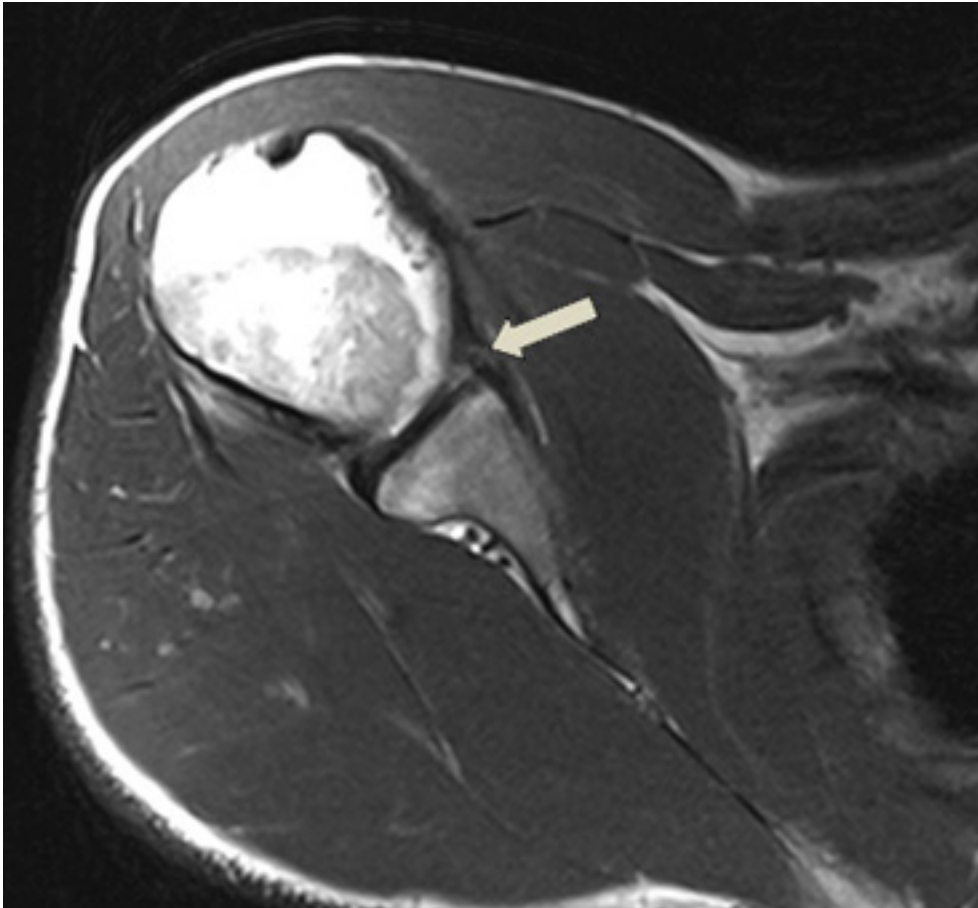


Figure 5: Axial T2WI showing anterior labral tear

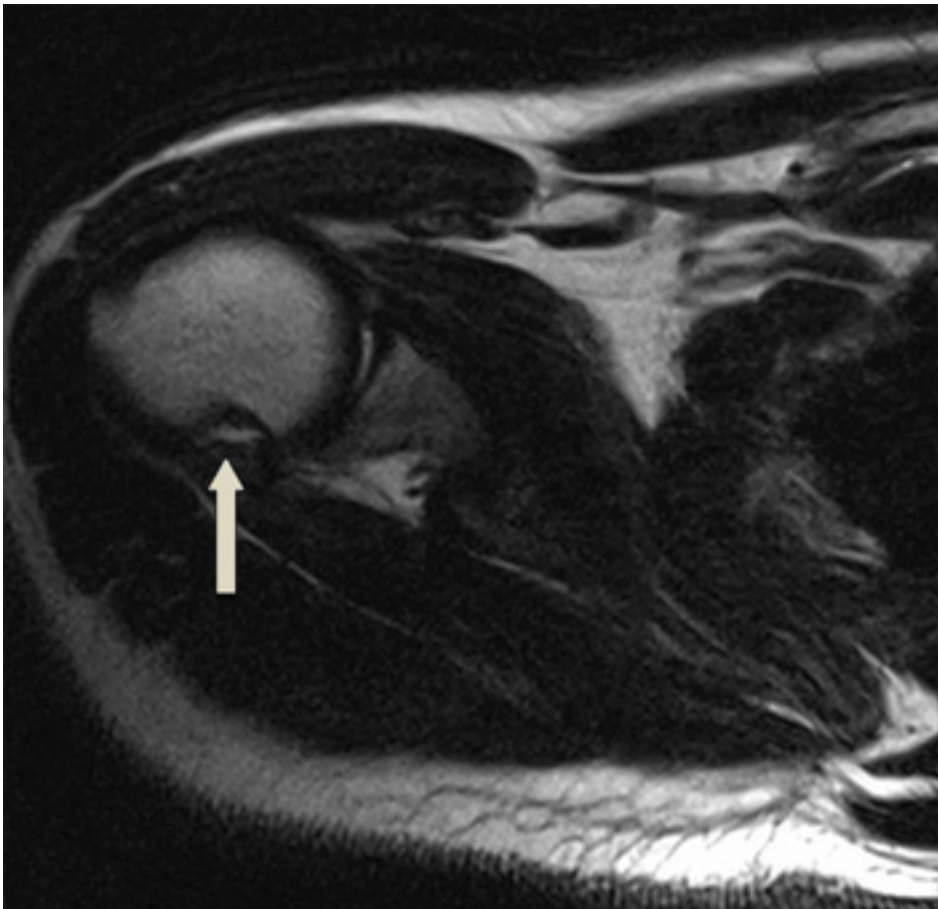


Figure 6: Axial T1WI showing Hill-Sachs Fracture.



Figure 7: Coronal oblique T1WI showing pathological fracture of the humeral head

Superior labral anterior posterior (SLAP) tears are pathology of the superior labrum usually on the attachment of the long head of the biceps tendon(10). Figure 5.

Bony pathologies can also be assessed by MRI, although it is not the modality of choice. Common bony pathologies noted in this study are Hill-Sachs injury, acromion deformities, Bankart fracture and pathological fracture. Figure 6 and 7.

Magnetic resonance arthrography is a special form of MRI where contrast material is injected into the joint so that the radiologist can get a better look at structures within the shoulder. According to Smith et al(11), MR Arthrography appeared marginally superior to MRI for the detection of glenohumeral labral lesions. On the other hand it is an invasive procedure with more complications than MRI.

Conclusion

Magnetic resonance imaging of the shoulder joint is a common non invasive investigation for shoulder pain that can detect many shoulder abnormalities; the most common abnormality found at our study was acromioclavicular osteoarthritis.

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