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**Dr Abdulrazak Abyad***Chief Editor*

This is the third issue of the journal for 2006. This issue is rich with papers from the different countries in the Middle East. There is a substantial research need in primary care in the region. Research is an essential prerequisite to developing the specialty further in the Middle East, and in developing evidence-based practice. The Middle East Primary Care Research Network (MEPCRN) was started two years ago with this aim in mind. Membership of the MEPCRN is being developed rapidly, and now includes representatives from across the region. Membership from individuals as well as from networks is welcomed.

The aim of the MEPCRN is to develop family medicine research in the area, in particular to do the following:

1. To build a primary care research network to fulfill unmet research needs.
2. To do collaborative research within the region, and with other networks.
3. To lobby for financial support for research in primary care from different organisations.
4. To help in the development of research training programmes and the professional development of family physicians/researchers.
5. To organise conferences that deal with research in family medicine
6. To establish a number of experts from a multidisciplinary background to act as advisors and mentors.
7. To help in publication of research studies from the region.
8. To foster collaboration between individual primary care physicians, centres and countries within the region.
9. To help in the exchange of ideas and methodologies in the region.

The network is in the process of completing the first study on Frequency of Job-Related Burn-out in Family Physicians working in General/Family Practice. In addition MEPCRN was part of a recent research proposal for the European-Mediterranean cooperation. The mini website of the MEPCRN is <http://www.mejfm.com/mepcrn/index.htm>.

In this issue Mansour AA et al report on foot abnormalities in diabetics: prevalence and predictors in Basrha. The aim of this study was to estimate the

prevalence of diabetic foot abnormalities among patients with type 2 DM and the predictors of these abnormalities in Basrha. This was a cross sectional study of patients attending the out patient clinic of two hospitals in Basrha (the General and the Teaching) for the period from January to the end of December 2005. The total number of patients was 182 (80 males and 102 females). The authors concluded that variables that predict foot abnormalities include higher age, male sex, less school achievement, longer duration of DM, higher BMI, smoking history, low social class, insulin use, hypertension, heart failure and proteinuria.

A study from Jordan compared the efficiency of local infiltration of bupivacaine and parenteral administration of diclofenac sodium for post tonsillectomy pain in adults. A total of 120 patients were studied. Pain intensity after surgery was assessed by asking patients to express their pain on a visual analogue scale 0 - 100 mm scale (0 mm: no pain; 100 mm : maximum imaginable pain) . It was concluded that pre-incisional infiltration of local anesthetic (bupivacaine) and pre-operative parenteral administration of an NSAID, diclofenac sodium, were found to be equally effective methods for treating post tonsillectomy pain.

A study from Iran compared the pattern of Interpersonal Relationships in University students in Persian culture. The author used a 24-item Interpersonal Relationship Inventory that yielded a factorial structure based on the 4 domains of interpersonal relationships: family, friend, extended (non-familiar), and personal. For the study a total of 246 subjects were considered. It has been found that the domain of family relationship of interpersonal relationship was the most dominant factor followed by the friend relationship. Therefore interpersonal relationship was found to be more influenced by the family and friend relationship elements of the ingroup structure (such as family, parents, and friends). The results indicated that the relationship of family factors to the intimate relationship of young adult university students, has greater adaptability in the family system during adolescence.

Another study by Dr Al-Jayousi reports on Progressive Sensorineural Hearing Loss and its Relation with Normal Tension Glaucoma. The study was a prospective study that was conducted in South Shouna Hospital (Ministry of Health- Jordan) during the period between 2003 - 2005. The study revealed that the association between hearing loss, normal tension glaucoma and

antiphospholipid antibody indicates that they are part of the autoimmune systemic process.

A case scenario from the University Hospital, Lewisham, London discusses the problems of persistent otalgia. The authors discussed common presentations, things to look for in the history and management of modalities.

Another study from Iraq reported on the epidemiology of upper respiratory tract infections among children under five years old attending general teaching hospital. The authors stressed that the greatest problem for developing countries is the mortality from ARI in children less than five years of age. In his conclusions the authors stressed that Pneumonia was the most common form of ARI observed among the study cases, and the higher frequency of ARI was observed during December. They identified history of LBW in infants, under nutrition, lack of immunization, absence of breast-feeding in the first six months of life, educational level of parents, child history of major or chronic disease, living in crowded quarters and paternal smoking were observed to be important risk factors for both development and severity of ART. The authors recommend strengthening of the ARI programme in order to have its message reach the majority of Iraqi mothers.

Dr Kamrani conducted a study to investigate serum lipid levels of Tehranian people. A random sample of 2000 participants aged more than 60 years were selected by random sampling process. In this study the author stressed that since CVD events are increased by elevated Total Cholesterol and LDL Cholesterol, and high prevalence of Lipoproteinaemia in older people in Tehran, a design and execution of Comprehensive Geriatric assessment is needed to reduce patients at high risk of Cardiac events.

A study from Turkey presented the usage frequency and type of herbal treatments. The author stressed that alternative treatment usage is increasing around the world although treatment methods are becoming more modern and more drugs are made available. The author's aim was to determine the incidence of treatment with herbs, in Turkey and the reasons for its usage. The study was carried out with a questionnaire on the Internet which 19022 persons, who had received preliminary information, completed. 75.9% of those participating in the study reported that they had used

a herbal medication at least once. The main health problems leading to the usage of herbal medication for their treatment was hair loss - hair care, hemorrhoids, skin care, peptic ulcer - gastritis and infertility. The plants the participants were most interested in were nettle, St. John's wort, rosemary, garden sage and hawthorn. The main reason for interest in herbal treatments was "hoping to find a herbal medicine which could help treat their condition". Nettle, oleander and thyme were the plants most commonly used to treat cancer patients. Turkey has a higher rate of alternative medicine usage than other countries where similar studies have been conducted and comprehensive and regular studies are required to show changes over time.

Regular contributor, Dr Manzoor Butt from Pakistan, highlights local issues in 'View from Pakistan' where he looks at some of the failures of the current system and suggests measures to overcome them.

We would like to invite you to start sending your nominations for MEJFM doctor of the Year for 2006. Our 2005 winner was Dr Javid Farouqi from Abu Dhabi, UAE.

The MEJFM, medi+WORLD International and the Australia Arab Chamber of Commerce & Industry Inc has joined forces to secure second hand laptops for distribution amongst the Iraqi medical establishment in order to help in the humanitarian side of rebuilding Iraq. medi+WORLD International are now making their online medical education program, [www.WorldCME.com](http://www.WorldCME.com) free to Iraqi doctors. However, access to internet services is limited with most doctors relying on 'internet cafes' for services. To improve access and expand the delivery of the free online medical training programs 'second hand laptops' which would be placed in hospitals, clinics and places where doctors gather, are required. Distribution of the lap-tops would be coordinated through an Iraq based medi+WORLD International advisor who is coordinating the provision of the training program. Dr Bahjat Safaa, of Kirkuk Iraq, outlines the current needs of both medical practitioners and the people of Iraq, in his article, Eyes of the Truth.

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# Epidemiology of Acute Respiratory Tract Infections (ARI) among Children Under Five Years Old Attending Tikirit General Teaching HOSPITAL

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## INTRODUCTION

Acute respiratory tract infection (ARI) is considered as one of the major public health problems and it is recognized as the leading cause of mortality and morbidity in many developing countries. The greatest problem for developing countries is the mortality from ARI in children less than five year of age <sup>(1)</sup>.

In most countries, ARI occurs more frequently than any other acute illness, including diarrhea and other tropical diseases.

In developing countries 30% of all patients consultation and 25% of all pediatric admission are of ARI <sup>(3)</sup>. Most infections are limited to the upper respiratory tract and 5% involve the lower respiratory tract. A large proportion of ARI is present as pneumonia or bronchiolitis. Incidence of ARI is almost the same all over the world : 5-7 episodes per child per years in urban areas and 3-5 episodes in rural area <sup>(4)</sup>.

ARI is mostly caused by both viruses and bacteria. Viral agents account for 90% of Upper respiratory tract infection (URIs), however most of these infections do not result in fatal sever disease; they are mild and self limited illnesses. While Bacterial pulmonary infections are common in developing countries associated with a greater risk of death <sup>(5)</sup>.

It should be noted that viral and bacterial infections occur frequently. Some associated infections include: common cold, acute otitis media, acute sinusitis, sore throat, pertussis, bronchiolitis and pneumonia. <sup>(6)</sup>.

Mortality due to ARI is high in developing countries which may reach 1000 or more per 100000 live births compared to 30-40 per 100000 live births in industrialized nation <sup>(7)</sup>. The WHO estimate that in 1990 ARI tragically caused 13 million children die each year, 4.3 million children die from ARI, mostly pneumonia, every year in developing countries. Two- third occurs

in children under one year of age <sup>(1),(2)</sup>. Billions of children suffer acute or chronic morbidity arising from their effects. In all countries ARI is a leading cause of hospitalization and death. Therefore ARIs represent a large challenge in field of communicable diseases <sup>(4),(8)</sup>.

Recognizing the magnitude of ARI problem, which requires immediate and concerted action, the WHO has initiated a global program for its control. The WHO/ARI program is viewed as critical part of primary health care and is directed towards children under the age of five years. Its primary objective is to reduce the severity and mortality of pneumonia in children. Other objectives of the program are to reduce the incidence of acute lower respiratory tract infection, to reduce the severity and complications from acute upper respiratory infection, and to decrease the inappropriate use if anti microbial and other drugs for the treatment of ARI in children <sup>(9)</sup>.

## Aim of the study

To study the Epidemiology of acute respiratory tract infections in children under five years attending Tikirit General Teaching Hospital.

## Objectives of the Study

The Study was conducted to:

1. Evaluate the effect of age, sex and residency on the ARI occurrence and severity.
2. Demonstrate the occurrence and severity of ARI according to history of low Birth weight, nutritional status and immunization status.
3. Identify the effect of feeding pattern on the ARI occurrence and severity.
4. Recognize the relationship between history of major or chronic illnesses and ARI occurrence and severity.
5. Describe the effect of maternal and paternal smoking on the ARI occurrence and severity.
6. Assess the relationship between mother and father educational level and ARI occurrence and severity.
7. Identify the effect of family history of chronic respiratory problems and asthma on the ARI



occurrence and severity.

8. Estimate the association between crowding index and the ARI occurrence and severity.
9. Identify the frequency distribution of clinical signs and symptoms considered by mothers, and the clinical signs considered the seriousness of ARI.
10. Recognize types of decision to seek medical advice and the distribution of ARI cases according to admission to hospital.

## SUBJECTS AND METHODS

### Design of the Study :

The current work represent a hospital based longitudinal study, which was conducted for the period extended from the first of November 2004 to the end of April 2005 and with regular working hours.

### Socio-Demographic Characteristics :

The study is conducted in Tikrit General Teaching Hospital which represents one of the biggest centers located in the center of Tikrit city which serves a large proportion of the community of different socio economic levels.

Salahaldeen Governorate has an estimated population of (1162490) person; Tikrit city represent (159721) of the population and about (20 %) of those are children under 5 years of age.

### The Study Groups :

Two thousands four hundreds fifty children under 5 years of age, who had attended the hospital for treatment of acute respiratory tract infections, were collected from the outpatient clinic.

### Pilot Study and Preset :

A small- scale pilot study was carries out on a sample of 30 cases including babies with their parents to identify any areas of ambiguity in the questionnaire and to have an idea about time required and other practical points before final study was launched.

Another seminar was made in the Community Medicine Department of the Medical College of Tikrit University, in the present of the chairman of the department, the supervisor of the study, the staff of the department and post graduate students of the college.

Discussion was made at the end of the seminar, and comments, notes and suggestions were given by the

audients, which were very wrathful and helped much in conducting the final study in more perfect and practical way.

### Development of the Questionnaire and Data Collection:

The questionnaire was developed to collect the following information:

Age: included three age group (<2) months, (2-11) months, (12-60) months.

Sex

Type of feeding: which includes type of feeding for infants lass than 6 months of age and divided to ; breast feeding only, bottle feeding only, and bottle and breast feeding (mixed).

Immunization: the immunization status of cases was investigated for, BCG, DPT, polio, Measles, and MMR vaccine and the children were grouped in to non, partially, and fully immunization status according to their age.

History of low birth weight which consider for infants only.

History of any major or chronic illness.

Residency.

Educational level of parents.

Mother's employment status.

Parental smoking.

Crowding index: number of persons sleeping in one room <sup>(29)</sup>.

History of chronic respiratory problems among household.

Family history of asthma.

Type of heating and cooking system.

The knowledge of mothers of cases regarding the seriousness of ARI were investigated and their ability to recognize the following important signs (rapid or difficult breathing, chest indrawing, nasal flaring, inability to drink, and becomes sicker) <sup>(48)</sup>.

### (For more detail about questionnaire see appendix 1)

### Examination :

Clinical assessment every case with ARI was examined for the following points:

- Temperature.
- Respiratory rate: was determined by inspection of the child chest for 60 seconds, the RR was counted twice and the average count was recorded.
- Chest indrawing: by observing the subcostal and intercostals space.
- Stridor in calm child.
- Wheeze

### Nutritional Status Examination

The nutritional state of every child was classified depending on the basis of body weight for age. So the weight of every child was measured in kilogram and children with body weight at or below the 3rd centile were classified as undernourished child <sup>(133)</sup>.

Then ARIs cases were assessed and classified according to WHO/ARI case management chart into :

A. Very severe disease when child presented with certain signs such as convulsion, abnormally sleepy or difficult to wake, stridor in a calm child, not able to drink, severe under nutrition.

B. Severe pneumonia when child presented with chest indrawing with or without fast breathing.

C. pneumonia when child presented with fast breathing but no chest indrawing.

D. No pneumonia (cough or cold) no chest indrawing or fast breathing <sup>(7)</sup>. (for more detail see appendix 11)

The cases admitted to the wards of the hospital had been followed up for further information regarding treatment regime.

### Statistical Analysis:

The data collected on (2450) children included in the study were studied to assess the association of many risk factors with the occurrence of ARIs and the association of many risk factors with the severity of ARIs cases was also determined.

Conventional statistical techniques were applied to the data in study of distribution by frequency percentage and table representation. The nature of the association studies by application of statistical tests to measure the association by help of X<sup>2</sup> test with the value of P less than 0.05 as the limited level of significance determination of the difference between percentages.

### RESULTS

The total sample studied in this research was (2450) children have ARI among 5550 children attending to Tikrit General Teaching Hospital from the first of November 2004 to end of April 2005 of the total ARI cases, 216 (8.8%) were classified as very severe disease, 480 (19.6%) as severe pneumonia, 1181 (48.2%) as pneumonia, and 573(23.4%) as no pneumonia (cough or cold) (**Figure 1**).

The monthly distribution of cases showed that the

lowest frequency was in April, 147 (6%) followed by March, 221(9%) and Feb., 368(15%) then November, 466(19%) and Jan., 490(20%), while December showed the highest frequency, 760(31%) (**Figure 2**).

The study shows that 1539 (62.8%) of all ARIs cases occurred in the first year of life and ARI was most frequently diagnosed at the age group (3-13) months 1279 (52.2%). High significant association was observed between the age and ARI severity (**Table 1**).

Regarding the gender the study shows that in 2450 cases of ARIs, 1612 (65.8%) were found to be males and 838 (34.2%) were female and ARIs were 1.5 times higher among males than females. It showed that no significant association was observed between ARI severity and gender. (**Table 2**).

This study shows that 420 (17.2%) of ARIs cases had history of LBW. There was statistical significant association between LBW history and severity of ARIs. (**Table 3**).

Regarding Immunization, (**Table 4**) shows that 1514 (61.8%) of cases were fully immunized according to the Immunization schedule. There was a weak association between the Immunization status and occurrence of ARI but a high statistical significance regarding the severity of ARIs cases (P-value = 0.0001).

(**Table .4**) also shows that 60% of children who were not vaccinated at all versus 12.7% of children who were fully vaccinated had severe type of ARIs.

Furthermore the study shows that there was a significant association between the occurrence of ARIs and undernourished children. Of all undernourished children, 240 (51.6%) were observed to have severe diseases (very severe disease and severe pneumonia). There was a highly significant association between the undernourished children and ARI severity. (P-value = 0.0001) (**Table 5**).

The data on (**Table. 6**) demonstrates that, of the total 824 cases of age less than 6 months, 224 (27.2%) were breast feeding, 461 (55.3%) were bottle feeding and 139 (17.5%) were mixed feeding babies. (**Table 6**) also shows that breast feeding provides a highly significant protection against ARI occurrence and there was a highly statistical significant association between ARIs severity and type of feeding (p- value =0.0001).

Previous illness history demonstrates that 417 (17%) of ARI cases were having history of major or chronic illness and these children having excessive risk of about 1.8 times higher than children without such a history

and there was a highly statistical significant association between ARI severity and positive history of major or chronic illness (**Table 7**).

Out of the children with major or chronic illness, 270 (64.7%) had CHD, 64 (15.3%) had chronic diarrhea, 49 (11.7%) had Leukemia, 15(3.5%) had TB, 10 (2.4%) had hepatitis and 10 (2.4%) had chronic renal problem.

Regarding residency distribution the study shows that most of cases 2078 (84.8%) were from urban areas with no significant association between area of residency and the occurrence of ARIs. All cases from rural areas had pneumonia of different severity (very severe disease 83 (22.4%), severe pneumonia 64(17.1%), and pneumonia 225(60.5%) with strong statistical significant association between ARIs severity and rural residency (P-value = 0.0001) (**Table 8**).

The study shows that, the maternal smoking had no significant association with the occurrence of ARI but have high statistical significant with the severity of ARI cases. (**Table 9**).

While the factor of father smoking was positive in 1332 (54.4%) of cases with highly significant association with the occurrence of ARI, but there was no significance statistical association observed regarding the severity of ARI cases with paternal smoking. (**Table 10**).

The children of highly educated mothers constituted only 162(6.6%) of total ARI cases and there was a significant association between occurrence of ARI, and mother educational level and there was a highly significant association between the mother educational level and ARI severity (P-value = 0.0001) (**Table 11**). While regarding the father educational level there was also have a highly significant association with occurrence and severity of ARI cases. (**Table. 12**).

This study illustrates that 363 (14.8%) of the cases have a positive history of chronic respiratory problems among household members. Children with such a history were 4.17 times more likely to have ARI than the children with a negative history. But no statistical significance was observed with severity of ARI cases (**Table 13**).

After taking family history the study shows that, 1275 (52%) of total ARI cases had family history of asthma. There was a significant association between ARI occurrence and family history of asthma. Also in (**Table 14**) it was found that, out of the total children with positive family history of asthma only 103 (8.1%) were having very severe disease, while 250 (19.6%), 642 (50.4%), and 280 (21.9%) were having severe pneumonia, pneumonia and no pneumonia respiratory.

There was no statistical significance association between illness severity and such history. (**Table 14**).

Regarding crowding condition the study demonstrate that 1000 (40.8%) cases having a crowding index of (3-5), but high percentage of case 755 (30.8%) had crowding index of more than 5. there was a highly statistical significant relation between the occurrence and severity of ARI with living in crowding quarter.

The mothers of the cases considered the danger signs as follows:

Fever was considered by 2291 (93.5%) mothers as danger sign, 2276 (92.9%). Mothers agreed that cough is a danger sign, difficulty of breathing considered by 449 (44.9%) of mothers, running nose, wheezing, feeding difficulty, and rapid breathing were known by 1017 (41.5%), 953 (38.9%), 877 (35.8%) and 539 (22%) of mothers respiratory. While cyanosis, sleep disturbance, drinking difficulty, convulsion, and chest in drawing, were considered by small percentage of mothers as danger signs. (**Table 16**)

When the ability of the mothers to differentiate seriousness of respiratory disease was investigated, the study results showed that, 1936 (79%) of ARIs cases mothers were unable to differentiate the seriousness of illness by any right sign or mentioned only one right sign, 461(18.8%) mothers differentiated 2 right signs and only 54(2.2%) of the mothers knew 3 right signs and more.

Many socioeconomic problems occurred in our country after the last war, which have different effects on many risk factors of ARI.

Regarding type of heating fuels very high percentage of families of 2406 cases (98.2%) were depending on Kerosene in addition to electricity (when available), while only few families (1%) of cases were depending on electricity alone. (0.8%) of cases used wood for heating. Liquid gas propane was the major sources of fuel for cooking, 23 families of cases were depending on wood as source of fuel for cooking. No further analysis was carried out regarding types of heating and cooking fuel.

A High percentage of mothers of cases (98.7%) were housewives.

The study shows that the dangerous signs in ARI children include fever (87%), the second is cough that should be considered as dangerous signs (63%), while difficulty of breathing was found in (44.6%) of ARI patients, running nose, rapid breathing was

found in (25.6%) and (23%) respectively. While wheezing, cyanosis drinking difficulty, sleep disturbance, chest in drawing, malnutrition was considered by small percentage of mothers as a dangerous sign.(Table 17).

Regarding the hospital admission the study illustrates that 196 (90.9%), 446 (92.9%), 652(55.2%) , and 176 (30.8%) of patients who had very severe disease, severe pneumonia, pneumonia , and no pneumonia respectively were admitted to hospital during the study period, so the total patients admitted to hospital were 1470 (60%), and 980 (40%) treated as an out patients.(Table 18).

This study shows that antibiotics were prescribed for 2005 (81.8%) cases as a part of hospital management, 100% of cases with very severe disease and severe pneumonia had received antibiotics, while 985 (83.4%) and 324 (56.4%) of cases with pneumonia and no pneumonia respectively, had received antibiotics. Other drugs prescribed were cough syrup for (61.2%) of patients and antipyretic for (55%) of patients of the total cases, 1254 (51.2%) cases received medications before presenting to hospital, 960 (77.3%) of those children received these medications by prescriptions from private doctors, and 172 (13.7%) of cases, by physicians in health centers, and 112 (8.9%) of cases received these medications without any medical prescription. Of these 1254 children, 157 (12.5%) cases received cold medications only, 221 (17.6%) cases received antibiotics only, and 877 (69.9%) cases received both antibiotics and cold medications.

So, 1098 (44.8%) of total ARI cases received antibiotics before presenting to hospital 161 (14.7%) of them had very severe disease, 231 (21%) had severe pneumonia, 519 (47.3%) had pneumonia , and 187 (17%) had no pneumonia ( cough or cold) at time of examination.

when the child gets an ARI attack, the mother would take him to an private clinic in (42.8%) of cases , to health center in (14.4%), hospital in (12.0%), public clinic in (12.0%), only home management in (10.6%) using drugs from pharmacy in (6%), and would do nothing in (2.2%) only.

This means that (81.2%) of mothers will seek medical advice.(Table 20).

## DISCUSSION

Acute respiratory tract infection (ARI) are one of the most commonest causes of health problems with high morbidity and mortality among children under five years old particularly in developing countries <sup>(147)</sup>. Moreover, these infections place a heavy burden on the health services in terms of utilization of hospitals and health centers <sup>(17),(10)</sup>.

In Iraq ARI control programme had been adopted since 1990 <sup>(9)</sup>. For success of such a programme, ARI epidemiology is needed to be known which help to improve methods of management of these illnesses<sup>(148)</sup>.

The highest frequency of ARIs cases were observed to be found in December. This is comparable to the results found by International consultation on the control of ARI in 1991<sup>(61)</sup> . It might be due to overcrowding rather than climate <sup>(61)</sup>, or due to seasonality of infective agents themselves <sup>(116)</sup>.

ARIs were more frequent among infants in the present study. Early infancy less than 2 months of age has a highly significant association with severe ARI. These findings were in agreement with the result found by Qasim, AL-Jassar, AL-Karaguily, AL-Humairy, AL-Azzawi in Iraq <sup>(53),(32),(54),(55),(56)</sup> . This might be due to the fact that immunity has not become fully established, narrow airways, incomplete development of the lungs and relatively short bronchial tree <sup>(50),(124)</sup> .

Male patients were more infected with ARI than female. They were 1.5 times more likely to develop ARIs than female patients, but there was no significant association between gender and the severity of ARIs. These findings were consistent with AL-Jassar and AL-Karaguily in Iraq <sup>(32),(54)</sup>, but against the result found by Zhang et al in Beijing and Ali in Iraq <sup>(63),(64)</sup>, and also against the result found by AL-Humairy in Iraq <sup>(55)</sup> who found that male gender was highly significant associated with ARI severity.

Infants with a history of low birth weight appeared to has significant association with ARIs occurrence and severity. This was in agreement with Taylor, *et al*, chain et al in Japan and AL-Jassar in Iraq <sup>(75),(32),(76)</sup>, this might be due to low birth weight baby has a poor pulmonary function and low immunity, which makes them more liable to have ARI mainly in its severe picture <sup>(131)</sup>. This finding was against that found by Saddam and Al-Tawil in Iraq <sup>(62)</sup>, in which low birth weight was not observed to be as a significant factors



for ARI severity .

Immunization showed weakly association with the occurrence of ARI. This could be due to fact that there was lack of vaccination either partial or complete of the cases and this might be due to the events that occurred after the last war and invasion on our country. But immunization appears to be strongly associated with severity of ARI cases. This result was in agreement with results found by Broor et al in India and Al-Humairy in Iraq <sup>(87),(55)</sup>.

The results showed that there are significant association regarding the nutritional status on occurrence and severity of ARI. This observation was documented by AL-Humairy in Iraq, Rahman & Rahman in Bangladesh, Tupasi and Hamid in Southeast Asia <sup>(55),(80),(78),(79)</sup>. This could be explained by that the immunologic insufficiency which is common in malnutrition lead to infection <sup>(13),(50)</sup>.

Significant association had been observed regarding type of feeding and the development of ARI, that is breast feeding appeared to be highly protective against the occurrence of ARI. This finding was also noted in Perera, Nilay et al in Turkey, Shah et al in South Kerala and Fonseca in Fortaleza in Brazil. But against finding of AL-Jassar in Iraq who found that breast feeding was not significantly protective against the development of ARI, <sup>(67),(68),(70),(147)</sup>.

The cause of protection of human milk is due to its content of bacterial and viral antibodies, macrophages synthesizing complement and lysozymes <sup>(35)</sup>. There were a significant role of different types of feeding appeared to play on the severity of ARI cases, this result was agreed the result found by AL-Jassar in Iraq <sup>(32)</sup>, who found that breast feeding prevent severe forms of ARI . Illness severity might be aggravated by several factors like poor hygiene, home environment and maternal care <sup>(130)</sup>.

Strong association had been observed regarding positive child history of chronic or major illness and the occurrence and severity of ARI in this present study. Children with such history had (1.84) higher rate of ARIs than those children with no such a history. This observation was documented by AL-Jassar and Qasim in Iraq and Mc Millan et al in USA <sup>(32),(53),(52)</sup>. This could be explained by that, children with chronic or major illness have a general ill health, impaired immunity and poor nutrition <sup>(124)</sup>. Heart disease is associated with excessive pulmonary blood flow, which is responsible for recurrent

pulmonary infection in addition to poor general nutrition and impaired host defense, so children with congenital heart disease were more prone to severe ARIs <sup>(62)</sup>.

Considering area of residence whether rural or urban, there was no significant association between ARIs and residency. This was in agreement with AL-Shahabi et al in Iraq <sup>(57)</sup>, but against the result found by Pio et al in America and UNICEF/WHO statement program for the control of ARI in developing countries in 1986 <sup>(130),(34)</sup>. Regarding the severity of ARI cases in this study, rural areas appeared to play an important role, in which there was a highly significant association between ARIs severity and rural residency. This may be explained by the fact that cases of severe ARIs residing in rural areas are usually referred to hospital for admission, while less severe cases are usually treated in the primary areas. This result was documented with WHO\ARI program of control of acute respiratory infections in 1991 and Saddam & AL\_Tawil in Iraq <sup>(104),(62)</sup>.

The present study demonstrated that there was no association observed with ARI development of ARI cases and maternal smoking, but have a high association with ARI severity.

This result was agreed with Nilay et al in Turkey and Qasim & AL-Jassar in Iraq <sup>(68),(53),(32)</sup> but against the result found by ARI News letter in Egypt, Fergusson et al and Lopez et al in USA <sup>(24),(110),(108)</sup>. This might be due to the fact that smoking habit among female is not much accepted in our society, this leads to small number of smoking mothers, therefore the real association can not be demonstrated in the present study, but if a mother is smoker it will lead to aggravate the condition of the ARI to severe form.

Paternal smoking found to be highly associated with occurrence of ARI, this finding was against the result found by Fergusson et al in USA <sup>(108)</sup> that maternal smoking was strongly correlated with children respiratory diseases than paternal smoking, but our results of association of paternal smoking and occurrence of ARI was in agreement with result found by Rahman and Rahman in Bangladesh and Biswas et al in India <sup>(80),(107)</sup>. Passive smoking can act by increasing the rate of cross infection from the smokers, mediating an allergic reaction, or by causing irritation of the infantile passages and facilitate the spread of infection to lower respiratory tract <sup>(98)</sup>. There was significant association observed between the paternal and smoking and ARI severity.

This was found by Al-Humairy in Iraq <sup>(55)</sup>.

There was a strong association between the parent's education and the occurrence of ARI in the present study. This finding agreed with Lopez et al, Hamid et al, Nilay in Turkey <sup>(110),(79),(68)</sup>. The protective effect of parental education against acute respiratory infection awareness and care practices. This result was in disagreement with AL-Jassar in Iraq <sup>(32)</sup> who found that father's education play no role regarding the severity of ARI.

This present study demonstrated a highly significant association of chronic respiratory problems among household members and ARIs and it was found that , children with such a family history were 4.17 times more risky to develop ARI than children without that history. This result agreed with Pedrerita et al, Ware et al in America & Broor et al in India <sup>(115),(114),(87)</sup>, but against the result reported by Qasim and AL-Jassar in Iraq <sup>(53),(32)</sup>, which suggest that family history of chronic respiratory problems plays no role either in the occurrence or in the severity of ARI,. Also this study found that such a history plays no role in the severity of ARI, in which the study result showed that more than two-thirds of cases had mild forms of ARI (no pneumonia and pneumonia).

Strong association appeared between children from families with a positive history of asthma and ARI occurrence. This was documented by Lopez et al and Mc Connchie et al in America <sup>(110),(92)</sup>. But the present study demonstrated that there was no significant association regarding the severity of ARI. This result agreed with AL-Jassar in Iraq <sup>(32)</sup>.

The present study showed that children living in overcrowded houses were more liable to ARI than those children living in less crowded houses. This result coincided with the results in Rahman and Rahman in Bangladesh and Azize et al in Malaysia <sup>(80),(69)</sup>, but against the result found by Nilay et al in India <sup>(68)</sup>, Study in which there was no association between the number of persons per room and ARI occurrence. The results of this study also found that overcrowded houses had a highly significant association with development of severe ARI. This result was also demonstrated by AL-Shahabi et al in Iraq <sup>(57)</sup>.

A high percentage of mothers identifying the seriousness of ARI that paid their attention for seeking medical advice were fever and cough .

While fast breathing, chest indrawing, convulsion, drinking difficulties cyanosis, and sleep disturbance

recognized by a small percentage of mothers. This result was against the result found by Rashid et al in Bangladesh <sup>(148)</sup> study in which most of mothers recognized pneumonia and all mild and severe signs and symptoms of pneumonia. This result was also against the result found by Mohammed in Iraq <sup>(125)</sup>, but in agreement with results of WHO\ARI program of control of ARI in 1991, AL-Tae'e in Iraq, Gve and Aung et al in Southern Asian when mothers were not able to recognize serious ARI signs and symptoms from the simple one <sup>(104),(145),(141),(149)</sup>. This could be due a defect in health education aspect regarding ARI control program and also could be due to low educational level of mothers in the study sample in which about more than half of mothers were either illiterate or only have primary level of education. The present study found that about half of ARI cases had received a medications before presenting to hospital and (91.1%) of those children used these medications by prescription from doctors and only (8.9%) of them were using medications without any medical prescription.

This finding can reflect that mothers were more relying upon medical advises, and this should be further encouraged by education about the harm of misuse drugs without medical prescription.

Regarding antibiotic, of all medications antibiotics were used in (44.8%) of cases. Almost physicians prescribe antibiotics to reduce the number of return office of bacterial infections <sup>(138)</sup>. The prescription of antibiotics for ARI cases were not preventing them from reaching the hospital, this could be due to misuse of these antibiotics for viral infections or misuse by parents. This result is in agreement with result found by Pichichero et al in USA <sup>(138)</sup>.

Antibiotics were prescribed unnecessarily for ARI patient. In present study, antibiotics had been prescribed for (81.8%) of ARI cases as a part of hospital management, by application of WHO- ARI case management chart (**Appendix 11**). This rate can be reduced to 76% were prescribed unnecessarily for 5.2% of ARI cases which is lower than that found by AL-Jassar in Iraq & Gunha et al in Rio de Janeiro <sup>(32),(137)</sup>, which were 12.4% and 8.9% respectively.

This may reflect the increases in the awareness among medical staff regarding the unnecessary and harmful use of antibiotics and the ARI control program adopted by the ministry of health. Antipyretic and cough syrup were other drugs used for the treatment of ARIs cases as a part of hospital management. These two drugs might be useful to relieve symptoms, although most children with cold or cough need no drugs at all <sup>(122)</sup>.

Many cases admitted to hospital can be treated as an outpatients. The admission rate of ARI cases was 60% this rate can be reduced to 28.4% when WHO case management criteria for ARI cases were applied because 56.3% of cases admitted to hospital can be treated as an outpatients. This reduction is very important because it will decrease the burden imposed upon hospital <sup>(126)</sup>.

The result obtained from the study showed that a high percentage of mothers identifying the seriousness of ARI that paid their attention for seeking medical advice were fever and cough, while chest indrawing, convulsion, drinking difficulties Sleep disturbance was recognized by small percentage of mothers. This is in agreement with Gue and Aung in Southern Asian, Al-Jassar in Iraq and WHOARI program of control of ARI in 1991 where mothers were not able to recognize serious ARI signs from the simple ones <sup>(141),(104),(32),(149)</sup>. This may indicate that Iraqi mothers are not different from mothers elsewhere who had Considered fever and cough as an important signs that needed medical attention, and this might be due to the defect in health education aspect of ARI control program adopted by the ministry of health regarding dangerous sign <sup>(150)</sup>.

## CONCLUSION

Pneumonia was the most common form of ARI observed among the study cases, and the higher frequency of ARI was observed during December. Infancy, history of LBW in infants, under nutrition, lack of immunization, absence of breast-feeding in the first six months of life, educational level of parents, child history of major or chronic disease, living in crowded quarter & Paternal smoking were observed to be important risk factors for both, development and severity of ART  
Male gender and family history of chronic respiratory problems were found to be responsible for the occurrence of ARI but play no significant role in its severity.

Rural residences were found to have a significant effect on ARI severity. In this study the effect of maternal smoking on the development and severity of ARI was not clearly demonstrated.

Fever, cough and breathing difficulty were considered by mothers as an important signs for ARI which makes them look for medical advice. There is still a great lack of knowledge about ARI program among public, that is most of mothers were not able to recognize the dangerous signs of ARI.

Antipyretics and antibiotics were the most common types of medications used by cases before presenting to hospital, but this practice did not prevent the children from reaching the hospital. This may indicate a misuse of these antibiotics either by doctors or by families.

There was decreased in the prescription of unnecessarily antibiotics by hospital physicians.

The goal of ARI programme still not fully achieved and there is a real lack of effective ARI education programmes, as the majority of mothers were unable to recognize the dangerous signs of ARI. However, more information messages are needed to increase mothers ability to differentiate between mild and sever cases.

Mass media especially radio and TV, play an important role in distributing a scientific information among the population. So attention should be paid for the quality of information given to mothers through mass media .

## Recommendations

Strengthening of ARI programme in order to make its message reaches the majority of Iraqi mothers through the following :

- a. Mass media
- b. Training of doctors and medical workers
- c. Integration of the programme with Non Governmental Organization (NGOS).
- d. The ARI programme must share the health educational department in Ministry of Health during planning Implementation and evaluation for continuous medical education program which enable the medical staff to operate their scientific and medical information.
- e. To have an ARI unit PHC center, specially in low standard of living areas high density population and low level of education.

6.2.2 : Improvements in the case management skills of locally adapted guidelines provision management of childhood illness and activities to promote through the health staff on integrated their use.

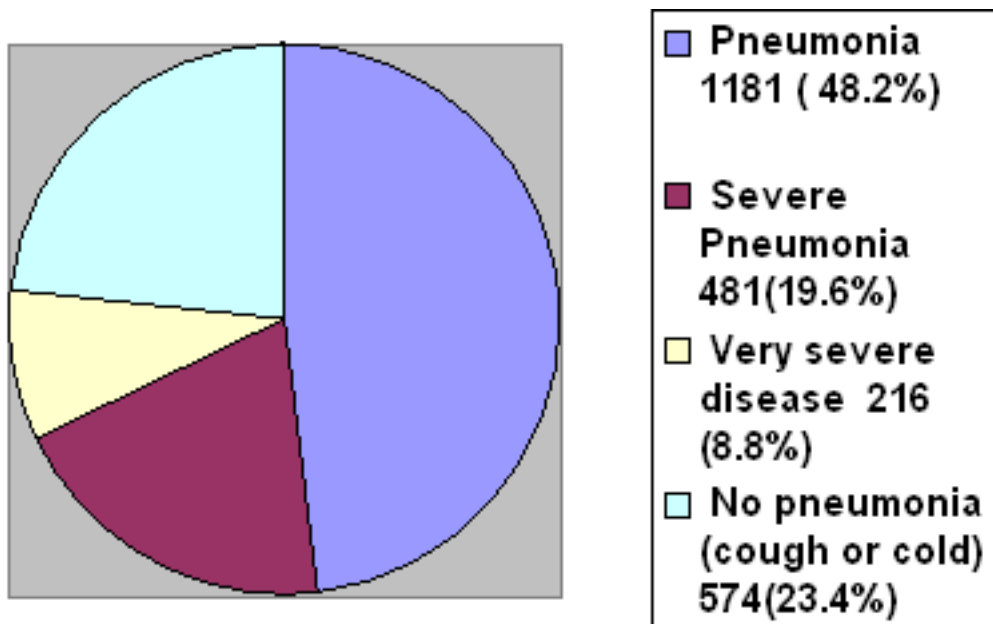
6.2.3 : Pediatricians and general practitioners should take their role in the process of education of families and particularly the mothers about the following :

- a. Causes of acute respiratory illness
- b. Risk factors of ARI
- c. Dangerous signs of ARI illness and the

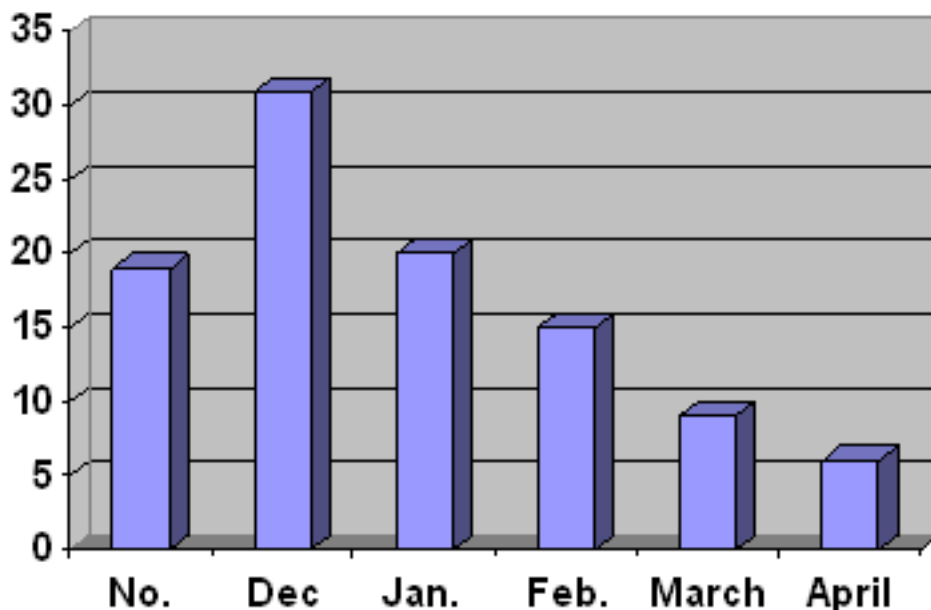
- importance of simple supportive therapy as well as the early referral of child with severe illness.
- d. The value of timely and complete immunization and the importance of breast-feeding.
- e. Avoidance of taking medications without

medical prescription  
 This practice should be as a part of management process even at the private clinics.

**Figure 1:** Distribution of Cases According to ARI Severity at Examination



**Figure 2:** The Monthly Distribution of Cases ARI Presented to Hospital From the First of November 2004, to the End of April 2005





**Table 1:** Age Distribution of ARI Cases and Distribution of Cases According to Age and ARI Severity

Age	Case		Severity of ARI							
			Very Severe Disease		Severe Pneumonia		Pneumonia		No Pneumonia	
	No	%	No	%	No	%	No	%	No	%
<2m	260	10.6	54	20.8	24	9.4	172	66	10	3.8
2-11m	1279	52.2	102	8	283	22.2	663	51.8	230	18
12-60m	911	37.2	60	6.5	113	19	346	38	333	36.5
Total	2450	100	216	8.8	480	19.6	1181	48.2	573	23.4

Chi-sq = 233.405  
DF = 6  
P-value = 0.0001

**Table 2:** Gender Distribution of ARI Cases and Distribution of Cases According to Sex and ARI Severity

Sex	Case		Severity of ARI							
			Very Severe Disease		Severe Pneumonia		Pneumonia		No Pneumonia	
	No	%	No	%	No	%	No	%	No	%
Male	1612	65.8	147	9.1	319	19.8	788	48.9	358	22.2
Female	838	34.2	69	8.2	161	19.3	393	46.8	215	25.7
Total	2450	100	216	8.8	480	19.6	1181	48.2	573	23.4

Chi-sq = 3.837  
DF = 3  
P-value = 0.280

**Table 3 :** Distribution of ARI Cases According to History of LBW and Distribution of Cases According to History of LBW and Illness Severity

History of Low birth Weight	Case		Severity of ARI							
			Very Severe Disease		Severe Pneumonia		Pneumonia		No Pneumonia	
	No	%	No	%	No	%	No	%	No	%
LBW	420	17.2	54	12.9	163	38.9	109	25.9	94	22.3
Nomal	2030	82.8	250	12.3	422	20.8	788	38.8	570	28.1
Total	2450	100	304	12.4	585	23.9	879	36.6	664	27.1

Chi-sq = 67.316  
DF = 3  
P-value = 0.0001

**Table 4:** Distribution of ARI Cases According to the Immunization Status and Distribution of Cases According to Immunization Status and Illness Severity.

Immunization Status	Case		Severity of ARI							
			Very Severe Disease		Severe Pneumonia		Pneumonia		No Pneumonia	
	No	%	No	%	No	%	No	%	No	%
Fully	1514	61.8	55	3.6	138	9.1	901	59.5	421	27.8
Partially	617	25.2	72	11.9	240	38.9	181	26.4	122	19.8
Not	319	13	88	27.7	102	32.3	99	30.8	30	9.2
Total	2450	100	216	8.8	480	19.6	1181	48.2	573	23.4

Chi-sq = 555.705  
DF= 6  
P-value = 0.0001

**Table 5:** Nutritional Status of ARI Cases According to Distribution of Cases According to Nutritional Status and ARI Severity.

Nutrition Status	Case		Severity of ARI							
			Very Severe Disease		Severe Pneumonia		Pneumonia		No Pneumonia	
	No	%	No	%	No	%	No	%	No	%
Under-nourished	464	19.0	188	23.2	132	28.4	147	31.6	77	16.8
Nomal	1986	81.0	108	5.4	348	17.5	1034	52.1	496	25.5
Total	2450	100	216	8.8	480	19.6	1181	48.2	573	23.4

Chi-sq = 200.664  
DF = 3  
P-value = 0.0001

**Table 6:** Feeding Pattern of ARI Cases and Distribution of Cases According to Feeding Pattern and Illness Severity

Type of Feeding	Case		Severity of ARI							
			Very Severe Disease		Severe Pneumonia		Pneumonia		No Pneumonia	
	No	%	No	%	No	%	No	%	No	%
Bottle only	461	55.3	89	18.4	108	23.7	140	30.7	124	27.2
Breast only	224	27.2	20	8.8	36	16.1	80	35.7	88	39.3
Mixed	139	17.5	31	25.0	102	32.2	99	30.8	30	9.2
Total	824	100	140	17.0	48	33.3	40	27.8	20	13.9

Chi-sq = 46.130  
DF= 6  
P-value = 0.0001

**Table 7:** History of Major or Chronic Illnesses of Cases and Distribution of Cases According to Such History and ARI Severity

Child history of major or chronic illness	Case		Severity of ARI							
			Very Severe Disease		Severe Pneumonia		Pneumonia		No Pneumonia	
	No	%	No	%	No	%	No	%	No	%
Yes	417	17.0	98	23.5	78	18.9	182	43.5	59	14.1
No	2033	83.0	118	5.8	402	19.8	999	49.1	514	25.3
Total	2450	100	216	8.8	480	19.6	1181	48.2	573	23.4

Chi-sq = 143.545

DF = 3

P-value = 0.0001

**Table 8:** Residency Distribution of Cases and Distribution of Cases According to Residency Distribution and ARI Severity

Residency	Case		Severity of ARI							
			Very Severe Disease		Severe Pneumonia		Pneumonia		No Pneumonia	
	No	%	No	%	No	%	No	%	No	%
Urban	2078	84.8	133	6.4	416	20.0	956	46.0	573	27.6
Rural	372	15.2	83	22.4	64	17.1	225	60.5	0	0
Total	2450	100	216	8.8	480	19.6	1181	48.2	573	23.4

Chi-sq = 208.179

DF = 3

P-value = 0.0001

**Table 9:** Distribution of ARI Cases According to Maternal Smoking and Distribution of Cases According to Maternal Smoking and ARI Severity

Mother Smoking	Case		Severity of ARI							
			Very Severe Disease		Severe Pneumonia		Pneumonia		No Pneumonia	
	No	%	No	%	No	%	No	%	No	%
Yes	99	4.0	16	15.0	10	10.0	64	65.6	9	10.0
No	2351	96.0	200	8.5	470	20.0	1117	47.5	564	24.0
Total	2450	100	216	8.8	480	19.6	1181	48.2	573	23.3

Chi-sq = 25.860

DF = 3

P-value = 0.0001

**Table 10:** Distribution of ARI According to Paternal Smoking and Distribution of Cases According to Paternal Smoking and ARI Severity

Father Smoking	Case		Severity of ARI							
			Very Severe Disease		Severe Pneumonia		Pneumonia		No Pneumonia	
	No	%	No	%	No	%	No	%	No	%
Yes	1332	54.4	109	8.1	234	17.6	646	48.5	343	25.8
No	1118	45.6	107	9.6	246	22.0	535	47.8	230	20.6
Total	2450	100	216	8.8	480	19.6	1181	48.2	573	23.4

Chi-sq = 14.454

DF = 3

P-value = 0.002

**Table 11:** Mother Educational Level of Cases and Distribution of Cases According to Mother Educational Level and ARI Severity

Educational Level of Mother	Case		Severity of ARI							
			Very Severe Disease		Severe Pneumonia		Pneumonia		No Pneumonia	
	No	%	No	%	No	%	No	%	No	%
Illiterate	623	25.4	74	12.0	103	16.5	387	62.1	59	9.4
Primary	891	36.4	98	11.0	196	22.0	392	44.0	205	23.0
Secondary	774	31.6	44	5.7	157	20.3	343	44.3	230	29.7
Higher	162	6.6	0	0	24	15.1	59	36.4	79	48.5
Total	2450	100	216	8.8	480	19.6	1181	48.2	573	23.4

Chi-sq = 186.921

DF = 9

P-value = 0.0001

**Table 12:** Father Educational Level of Cases and Distribution of Cases According to Father Educational Level and ARI Severity

Educational Level of Father	Case		Severity of ARI							
			Very Severe Disease		Severe Pneumonia		Pneumonia		No Pneumonia	
	No	%	No	%	No	%	No	%	No	%
Illiterate	397	16.2	54	13.6	88	22.2	226	56.8	29	4.4
Primary	725	29.6	73	10.1	196	27.0	363	50.0	9	12.9
Secondary	911	37.2	654	7.0	147	16.1	411	45.1	289	31.8
Higher	417	17.0	25	5.8	49	11.7	181	43.5	162	39.0
Total	2450	100	216	8.8	480	19.6	1181	48.2	573	23.4

Chi-sq = 217.912

DF = 9

P-value = 0.0001



**Table 13:** Distribution of ARI Cases According to Family History of Chronic Respiratory Problems and Distribution of Cases According to Such History with ARI Severity

Chronic Respiratory Problems Among Household Members	Case		Severity of ARI							
			Very Severe Disease		Severe Pneumonia		Pneumonia		No Pneumonia	
	No	%	No	%	No	%	No	%	No	%
Yes	363	14.8	39	10.8	79	21.6	138	37.9	107	29.7
No	2087	85.2	177	8.5	401	19.2	1043	50.0	466	22.3
Total	2450	100	216	8.8	480	19.6	1181	48.2	573	23.4

Chi-sq = 18.751  
DF = 3  
P-value = 0.05

**Table 14:** Distribution of ARI Cases According to Family History of Asthma Distribution of Cases According Such History with ARI Severity

Family History of Asthma	Case		Severity of ARI					
			Very Severe Disease		Severe Pneumonia		Pneumonia	
	No	%	No	%	No	%	No	%
Yes	1275	52.0	103	8.1	250	19.6	642	50.4
No	1175	48.0	113	9.6	230	19.6	539	45.8
Total	2450	100	216	8.8	480	19.6	1181	48.2

Chi-sq = 6.504  
DF = 3  
P-value = 0.090

**Table 15:** Distribution of ARI Cases According to Crowding Index and Distribution of Cases According to Crowding Index and ARI Severity

Crowding Index	Case		Severity of ARI							
			Very Severe Disease		Severe Pneumonia		Pneumonia		No Pneumonia	
	No	%	No	%	No	%	No	%	No	%
<3	695	28.4	34	4.9	132	19.1	392	56.0	137	19.7
3~5	1000	40.8	74	7.4	206	20.6	416	41.6	304	30.4
>5	755	30.89	108	14.3	142	18.8	373	49.4	132	17.5
Total	2450	100	216	8.8	480	19.6	1181	48.2	375	23.4

Chi-sq = 96.351  
DF = 6  
P-value = 0.0001

**Table 16:** Frequency Distribution of Clinical Signs and Symptoms Considered by Mothers to Reflect the Seriousness of ARI

Signs and Symptoms	Number of Mothers	%
Fever	2291	93.5
Cough	2276	92.9
Breathing difficulty	1100	44.9
Running nose	1017	41.5
Wheezing	953	38.9
Feeding difficulty	877	35.8
Rapid breath	539	22
Cyanosis	211	8.6
Sleep disturbance	100	4.1
Drinking difficulty	96	3.9
Conclusion	10	0.4
Chest in drawing	5	0.2

**Table 17:** The Clinical Signs Considered the Seriousness of ARI

Dangerous sign	No	%
Fever	2132	87%
Cough	1553	63.4%
Breathing difficulty	1093	44.6%
Running nose	627	25.6%
Rapid breath	564	23.0%
Feeding difficulty	279	11.4%
Wheezing	162	6.6%
Bluish	123	5%
Drinking difficulty	74	3%
Sleep disturbance	74	3%
Chest in drawing	25	1%
Malnutrition	20	0.8%

**Table 18:** Distribution of ARI Cases According to Admission to Hospital and Disease Severity

Hospital Admission	Very Severe Disease	%	Severe Pneumonia	%	Pneumonia	%	No. Pneumonia	%	Total
Yes	196	90.9	446	92.6	652	55.2	176	30.8	1470
No	20	9.1	34	7.1	529	44.8	397	69.2	980
Total	216	100	480	100	1181	100	573	100	2450

**Table 19:** Distribution of ARI Cases According to Admission to Hospital and Disease Severity

Antibiotic Uses	Severity of ARI Cases								
	Very Severe Disease	%	Severe Pneumonia	%	Pneumonia	%	No. Pneumonia	%	Total
Yes	216	100	480	100	985	83.4	324	56.4	2005
No	0	0	0	0	196	16.6	294	43.6	445
Total	216	100	480	100	1181	100	573	100	2450

**Table 20:** Type of Decision to Seek Medical Advice

Treated by	No	%
Private clinic	1049	42.8
Health center	356	14.4
Hospital	294	12.0
Public clinic	294	12.0
Home management	260	10.6
Do nothing	54	2.2
Drug from pharmacy	147	6

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# Serum Lipid Levels in Tehranian people

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## ABSTRACT

**INTRODUCTION:** This research was conducted to investigate serum lipid levels of Tehranian people.

**MATERIAL AND METHODS:** 2000 participants' ages more than 60 years (1198 females and 802 males) who were living in Tehran, selected by random sampling process. Data, in the cross - section study ( Nov. 2000 to March 2001 ) were used to determine Serum Lipid Levels : Total cholesterol (TC), High - density lipoprotein cholesterol ( HDL - C ), Low - density Lipoprotein Cholesterol ( LDL - C ), and Triglycerides ( TG ), Samples were Fast at least ( 12 - 14 ) hrs, the values were analyzed by sex and age.

**RESULTS:** - Mean Serum Triglycerides (TG) Concentration of older people above 60 years was 181 mg / dl; TG was significantly greater in Females than males (187 vs. 173 mg / dl,  $P < .000$ ).

- Mean Serum TG Concentration in elderly Females decreases with increasing age, this declining was significant, ( TG of decades 7, 8, 9 were 192, 182, 144 mg / dl -  $P < .001$  ).

- Mean Serum TG Concentration in elderly males decreases with increasing age. But this declining was not significant (decades 7, 8, 9 were 179, 166, 153 mg / dl).

- Mean Serum Total Cholesterol (TC) Concentration of older people above 60 years was 218 mg / dl. TC was significantly greater in females than males. (228 vs. 203 mg / dl,  $P < .000$ ).

- Mean Serum TC Concentration in elderly Females decreases with increasing age, this declining was significant, ( TC of decades 7, 8, 9 - were 230, 227, 210 mg / dl -  $P < .004$  ).

- Mean Serum TC Concentration in elderly males decreases with increasing age, this declining was significant, ( TC of decades 7, 8, 9, were 206, 198, 193,  $P < .004$  ).

- Mean Serum HDL - c Concentration of older people above 60 years was 47 mg / dl, HDL - c was Significantly greater in Females than males ( 49 vs. 44 mg / dl  $P < .000$  ).

- Mean Serum HDL - c Concentration in elderly Female had no Significant Changes with increasing age (HDL - c of decades 7, 8, 9 were 50, 48, 46 mg / dl).

- Mean Serum HDL - c Concentration in elderly male had not Significant Changes with increasing age (HDL - c of decades 7, 8, 9, were 44, 44, 44 mg / dl ).

- Mean Serum LDL - c Concentration of older people above 60 years was 138 mg / dl. LDL - c was significantly greater in females than males (145 vs 128 mg / dl  $P < .000$ ).

- Mean Serum LDL - c Concentration in elderly Female had no Significant Changes with increasing age (LDL - c of decades 7, 8, 9 were 144, 147, 141 mg / dl).

- Mean Serum LDL - c Concentration in elderly male had no significant Changes with increasing age (LDL - c of decades 7, 8, 9 were 130, 128, 118 mg / dl).

63.4% of Population had TC values above 200 mg / dl, and 55.8% had LDL - c values above 130 mg / dl, that due to NCEP guidelines is a high risk group for cardiovascular disease (CVD).

**CONCLUSION:** Because CVD events are increased by elevated Total Cholesterol and LDL Cholesterol, and high prevalence of Lipoproteinemia in older people in Tehran, design and execution of Comprehensive Geriatric assessment is needed to reduce patients at high risk of Cardiac events.

**Keywords:** Lipids - Lipoproteins, Tehran.

1 - HDL - c = High Density Lipoprotein

2 - LDL - c = Low Density Lipoprotein

3 - NCEP = Nation Cholesterol Education Program, 4 - CGA = Comprehensive Geriatric Assessment



## INTRODUCTION

The major cause of death and handicap among adults is coronary blood vessel heart disease.<sup>[3-7]</sup> In epidemiology studies between Atherosclerosis coronary blood vessel heart disease and the levels of Lipoprotein serums, the relationship has been clearly and distinctly defined<sup>[8-10]</sup>. Although, there is much evidence regarding the fact Atherosclerosis begins from childhood<sup>[11-12]</sup> it may be that Atherosclerosis could be taken into account as the inevitable result of adulthood. Most adults have one or more risk factors for coronary blood vessel heart diseases (CAD)<sup>[13]</sup>. Occurrence of elements of danger, or risk factors, is reduced slightly after the age of 75<sup>[14]</sup>. Of course this reduction may be related to natural survival, as people of higher risk factors will die in lower ages.

Despite this reduction, with ageing, the total mortality risk and morbidity due to coronary blood vessel heart disease (CAD) increases in adults. Danger elements related to heart and coronary diseases in adults mostly include lipoprotein disorder, smoking, blood pressure level increase, and diabetes<sup>[15]</sup>. Preventative philosophy of danger elements related to coronary blood vessel heart disease, exists for adults as it does for other age groups. In the Bronx ageing study, the HDL cholesterol levels of less than 30 mg/liter dc in men between 75 to 85 years of age, was observed alongside the increase in MI and death rate of the group. At the same time, the LDL cholesterol level was more than 171 mg/liter dc in women of the same age group which led to a higher increase in MI and death rate.<sup>[16]</sup> People over the age of 65 with coronary blood vessel heart disease are the main group with lipid disorders. The high level of blood cholesterol in this group generally causes an increased risk of a return of MI in men and women. In the Framingham study, the total cholesterol levels higher than 275 mg/liter dc, increase the risk of a return of MI and death due to coronary disease by more than 4 times. Also, the general risk of death in this group as compared with adults was total cholesterol less than 200 mg/liter dc which is 3 times higher<sup>[17]</sup>.

Such observations and the results, clearly show the importance of tertiary prevention in coronary blood vessel heart disease adult patients through the reduction of blood lipids.

Such extensive and scientific studies on Dislipoproteinemia in children and young people of the city population of Tehran<sup>[1]</sup>, and also the Lipid surface serum studies of the adult population of Tehran<sup>[2]</sup> has been carried out by Azizi and associates. But, until the present time, there have been no extensive studies in the area of the occurrence of dislipoproteinemia in adults over the age of 60.

The aim of this research is the study of serum lipoprotein concentration, total cholesterol - triglyceride- HDL and LDL, as well as allocation of amount of occurrence of dislipoproteinemia in adults over the age of 60 and residing in Tehran. This study has been carried out on 2000 people over the age of 60, who have referred to clinical and laboratory centers within the city of Tehran between the period of Nov. 2000 and March 2001.

## MATERIALS AND METHODS

According to observational design, a cross-sectional study of the descriptive type among referrals to various clinical and laboratory centers within the city of Tehran - (Northern- Southern- Eastern- Western areas) was carried out.

2000 people 60 years of age and above were chosen at random and studied. The dependent factors in this age study were (independent low-association variable) and sex (named sexual status variable) - and the dependant variables in this study were total cholesterol (Tc), HDL, LDL and triglyceride (TG).

Total serum lipoprotein concentration, HDL, LDL and TG was collected if fasting samples were collected.

In this study, 2000 people of 60 years and over, of which 1198 were old women (59.9%) and 802 were old men (40.1%) - and the study took place between the period of November. 2000 and March 2001.

The natural limit of cholesterol concentration LDL-c from the viewpoint of the possibility of occurrence of coronary blood vessel heart disease, has been considered according to the American cholesterol training programs (NCEP)<sup>[18]</sup>. In consideration of this, total cholesterol concentration of less than 170 mg/liter dc is considered as natural; between 172 -200 is considered as relatively dangerous, and more than 200 mg/liter dc as highly dangerous for those having coronary blood vessel heart disease. Also, for LDL amounts less than 110 mg/liter dc are considered as natural; between 110 - 130 is considered as relatively dangerous, and more than 130 mg/liter dc as highly dangerous.

The groups studied were divided into two age groups of male and female- and in each group, a division was made according to each decade of age, meaning that within the female or male groups, 70s age group, 80s and 90s and over age groups were considered. This statistical analysis was carried out on a computer, utilizing the Statistical Package For Social Sciences (SPSS) software and the average results were displayed within



the article, charts and tables as deviation of average and percentages. The age definitions were specified within the age grouping divisions in each of the decades of age in the case of total cholesterol concentration - LDL - HDL- and TG. The average amounts were understood after comparison through variance analysis of the two sexes and within the age groups, with the meaningful p value less than 5%.

## RESULTS

Age and sex distribution - among the 2000 people of 60 years and over, 1198 were old women (59.9%) and 802 were old men (40.1%) - in the female group 62.9% were within the 70s age range, 32.2% within the 80s age range and 5.5% within the 90s and over age range. In the male group 61.6% were within the 70s age range, 31.9% within the 80s age range and 6.5% within the 90s and over age range.

Levels of Serum Lipoprotein:

### TG:

The average concentration of TG among the total population studied was 181.67 mg/ liter dc with a minimum of 35 and a maximum of 980 mg/liter dc - in the female group the average TG concentration was 187.3 and in the male group 173.25 mg/liter dc, the conclusion of this variation was (P<.000).

In the female group the average concentration of TG in the 70s, 80s and 90s divisions were 192.78, 182.79, and 144.84 mg/ liter dc respectively, and the reduction in each decade has the following statistical meaning: (P<.001). In the male group the average concentration of TG in the 70s, 80s and 90s divisions were 179.07, 166.13, and 153.04 mg/ liter dc respectively, and the reduction in each decade, where we observed the swift reduction of TG with the increase in age. Therefore, this reduction is not statistically meaningful.

### TC:

The average concentration of TC among the total population studied was 218.61 mg/ liter dc with a minimum of 101 and a maximum of 557 mg/liter dc. In the female group the average TC concentration was 228.87 and in the male group 203.24 mg/liter dc. The conclusion of this variation, in statistical terms was (P<.000). 63.4% of the total TC population was above 200 mg, 23.5% had TG levels of 160 - 200 mg and 12.9% of the TC population was less than 120 mg.

In the female population, the average TC levels in the 70s, 80s and 90s divisions were 230.97, 227.52, and

210.59 respectively, which has the following statistical meaning: (P<.004). 73.1% of the female TC was above 200, 18.9% of the TC was 110-200 and 8% was less than 170 mg/liter dc.

In the male population, the average TC levels in the 70s, 80s and 90s divisions were 206.69, 198.65, and 193.00 respectively, which has the following statistical meaning: (P<.004). 49.1% of the male TC was above 200, 30.4% of the TC was 170-200 and 20% was less than 170 mg/liter dc.

### HDLc:

The average HDL concentration among the total population studied was 47.35 mg/ liter dc with a minimum of 15 and a maximum of 97 mg/liter dc - in the female group the average was 49.40 and in the male group 44.31 mg/liter dc, the conclusion of this variation among the two groups was (P<.000).

10% of the female population had HDL levels of less than 32 mg and 25% of the main population had HDL levels of less than 34 mg/liter dc.

In the female group the average HDL concentration in the 70s, 80s and 90s divisions were 50.13, 48.04, and 46.81 mg/ liter dc respectively, which reduction is not statistically meaningful.

In the male group the average HDL concentration in the 70s, 80s and 90s divisions were 44.14, 44.73, and 44.03 mg/ liter dc respectively, and the reduction is therefore not statistically meaningful.

### LDLc:

The average LDL concentration among the total population studied was 138.70 mg/ liter dc with a minimum of 32 and a maximum of 441 mg/liter dc. In the female group the average was 145.18 and in the male group 128.97 mg/liter dc- This difference is therefore statistically meaningful: (P<.000). 62.2% of the female group population had over 130 mg of LDL, while 19.6% had 110 - 130 mg of LDL, 18.2% had less than 110 mg/liter dc of LDL. In the male population, 46.2% had over 130 mg of LDL, while 22.8% had 110 - 130 mg of LDL, 13% had less than 110 mg/liter dc of LDL.

Within the total population studied (total of male and female), 55.8% had over 130 mg of LDL, while approximately 20.9% had 110 - 130 mg of LDL, and 23.3% had less than 110 mg/liter dc of LDL

Charts 1, 2, and 3 show the results of these studies.

## DISCUSSION

Of the population studied, 63.4% of the population had TC of above 200 mg/liter dc, 55.8% of the LDLc population had over 130 mg/liter dc. According to the new plans of the US Cholesterol Training Program (NCEP), these groups are considered as the highest risk groups of coronary blood vessel heart disease and must be supervised and treated.

The National US Nutrition and Health Program (NHANES) has successfully been able to reduce blood lipid levels in a long-term program; [19]. According to the announcement of this centre the average TC of people between the ages of 65 and 75 in 1960 was 230 mg/liter dc and in 1998 it reached 218 mg/liter dc. Also, the average concentration of TG in women between the ages of 65 and 75 in the same period was 266 and 234 mg/liter dc respectively. According to the information from the centre, the average concentration of Blood Lipids increases from the third decade to the seventh or eighth of life, and we are faced with the reduction in concentration of Blood Lipids generally after the age of 75. This reduction in lipid concentration may be related to the elimination of high cholesterol populations, which may be due to death, or perhaps from malnutrition of the elderly, or because of the illnesses accompanying advanced age periods [19]. Of course the reduction of blood TC at a level of less than 160 mg/liter dc which is called hypo-cholestyramine, is considered a danger to adults and according to their studies made, death from non-coronary or heart cases within this group is 40 to 50% higher than the elderly with equivalent cholesterol levels - the greatest reason for death among the hypo-cholestyramine groups have been homogenic intracranial - blood and lymph cancers - COPD, hepatic diseases and Sirius?serous diseases. [14] And therefore hypo-cholestyramine has recently in itself become considered as a marker for hidden cancers.

According to (NHANES) III data, the average concentration of TG in men of the 20-34 age group was 112 mg, in the 55-64 age group this amount was 162 mg, and in the 65-75 age group it was 159 mg, which increased with the increase of age, and from approximately the age of 65 it began to decline. In women of the 20-34 age group the average TG concentration was 101 mg, in the 55-64 age group this amount was 164 mg, and in the 65-75 age group it was 155 mg/liter dc.

The strong reduction of blood TG can also be observed in women after the age of 65, and such changes in relation with TC, HDLc and LDLc are reported as follows:  
Average TC concentration -

20-34 Age Group	50-64 Age Group	65-75 Age Group	<75 Age Group
M: 189 mg/liter dc	221 mg/liter dc	218 mg/liter dc	205 mg/liter dc
F: 185 mg/liter dc	237 mg/liter dc	233 mg/liter dc	230 mg/liter dc

We also observed the reduction in TC concentration after the age of 65.

The average LDL concentration in men of 55-64 is 142 mg/liter dc and in the 65-75 group it is 140 mg/liter dc, while in women of 55-64 it is 145 mg/liter dc and in the 65-75 group it is 147 mg/liter dc, and even the women about 75 years of age this is also 147 mg/liter dc and therefore in the female group the average concentration of LDLc does not show any reduction with increase of age.

The average HDLc in men of 55-64 is 47 mg/liter dc and in the 65-75 group it is 45 mg/liter dc, while in women of 55-64 it is 56 mg/liter dc and in the 65-75 group it is 56mg/liter dc. There is no reduction also observed here. At the same time, it has become clear that in all the Lipid divisions, the average concentration level is higher in women than in men.

According to the II program of (NCEP ATP), over 2 million people above the age of 65 suffer from coronary blood vessel heart disease and over 3.1 million people over the age of 65 suffer from increases in blood lipid levels without heart problems, who must be under supervision and treatment.

Based on the research carried out by Azizi and associates [1] in Iran, the average concentration of blood lipids in people under the age of 19 is as follows:

TG = 103 mg/liter dc      TC = 170 mg/liter dc  
LDLc = 105 mg/liter dc      HDLc = 45 mg/liter dc

Also, this average for adults between 20-65 years;[2], are respectively TG = 173 mg/liter dc, TC = 210 mg/liter dc, LDLc = 133 mg/liter dc, HDLc = 43 mg/liter dc, which clearly shows the increase of lipids with the increase of age.

In our study, which was carried out on people from the age of 60 and above, the average of blood lipids were in order:

TG = 181 mg/liter dc      TC = 218 mg/liter dc  
LDLc = 138 mg/liter dc      HDLc = 47 mg/liter dc

This again shows the trend of lipid increase with the increase of age. But in consideration of this average in each decade, [7,8,9] as is shown in chart 2 and 3, the highest amount is related to the 70s, at the age of 65 and later, and for each decade, in both men and women, a decrease in the concentration of lipid levels is expected.

In chart 1, the average concentration of all blood lipids in women is more than in men.

And this difference is meaningful in all blood lipid divisions as  $P < .000$ .

In both age groups also, in each decade, we are faced with a reduction of blood lipids, which reduction is meaningful in the TC division of men, and in the female group, the TG and TC divisions are meaningful. The changes in the HDLc and LDLc levels have a changing trend of increase in each decade of age which is of course not considered meaningful. And probably the most changes with increase of age is related to a reduction in the blood TG concentration and this factor has had an effect on the reduction of TC concentration in elderly people.

In studies carried out by Ghanbarian and associates, [20] on 414 women and 541 men above the age of 65 from the study group of Lipids and glucose in Tehran, in the main group 24 - 29 - 25 - 27 % respectively had  $< 240$  TC and  $< 200$  TG, and  $< 160$  LDLc, and  $< 25$  HDLc mg/liter dc, and the same statistics for the female group were 45, 40, 50, 12% respectively.

In our studies which were established according to the new guidelines by (NCEP), in which a TC level of about 200 mg, and LDLc levels above 130 mg are considered as highly dangerous for coronary blood vessel heart diseases. In the male group above the age of 60, the amount is 49.3% of cholesterol above 200 mg/liter dc and 46.2% LDLc about 130 mg/liter dc.

In the female group above the age of 60, the amount is 73.1% of cholesterol above 200 mg/liter dc and 62.2% LDLc about 130 mg/liter dc, which is considered as the most dangerous group in the opinion of CAD.

Although, with the comparison of the average concentration of blood lipid of people studied by us, no special differences were seen compared with the averages given by (NHANES) III data, it seems that in both population groups under study, the amount of female blood lipids is higher than the male population, and by taking into account the newly presented criteria for the omission of coronary blood vessel heart disease factors, a high percentage of people are considered by CAD to possess the risk factor for contracting Dislipoproteinemia. If each 1% reduction of LDLc in the blood creates a 2% reduction in death due to heart diseases, the results produced from specific attention paid to Lipoprotein serum concentration levels in adults facing the dangers of coronary diseases may be reflected on.

(NHANES) III: National Health and Nutrition Examination Survey

(NCEP ATP): National Cholesterol Education Program - Achft Treatment Panel

Chart 1

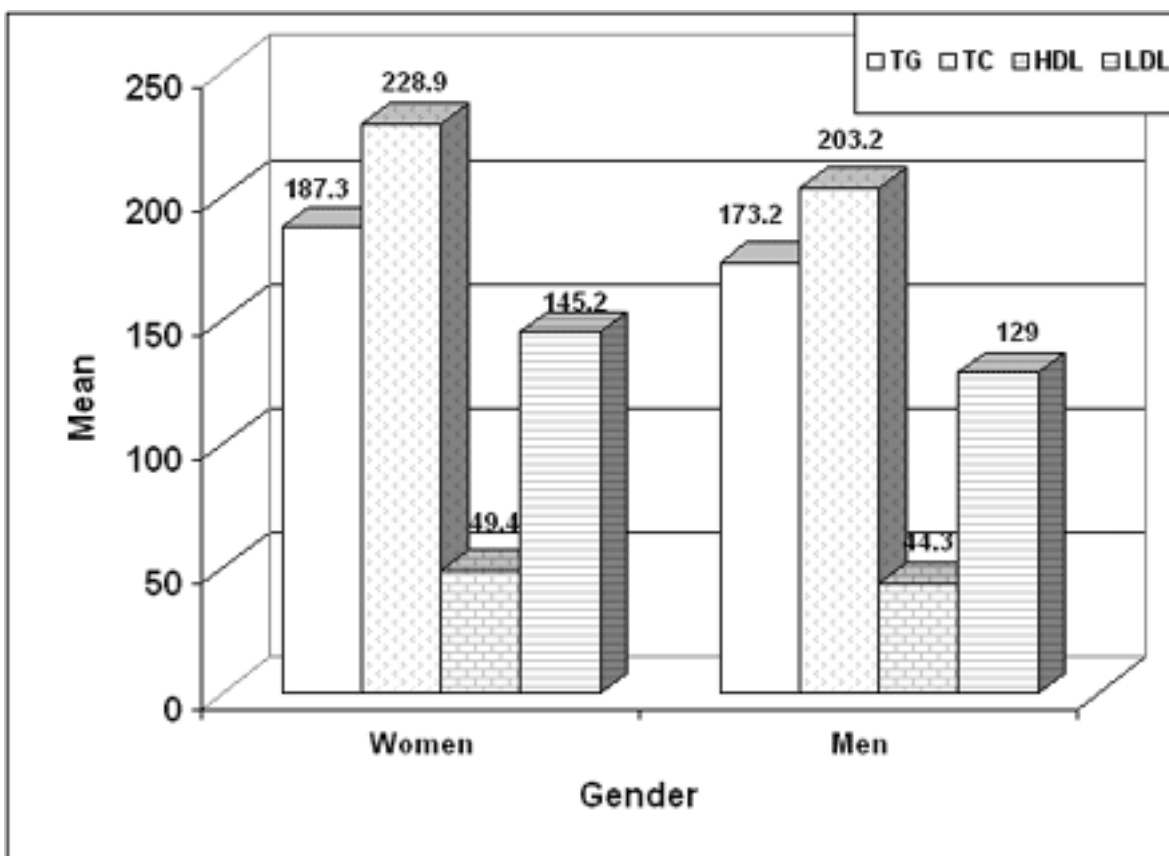


Chart 2

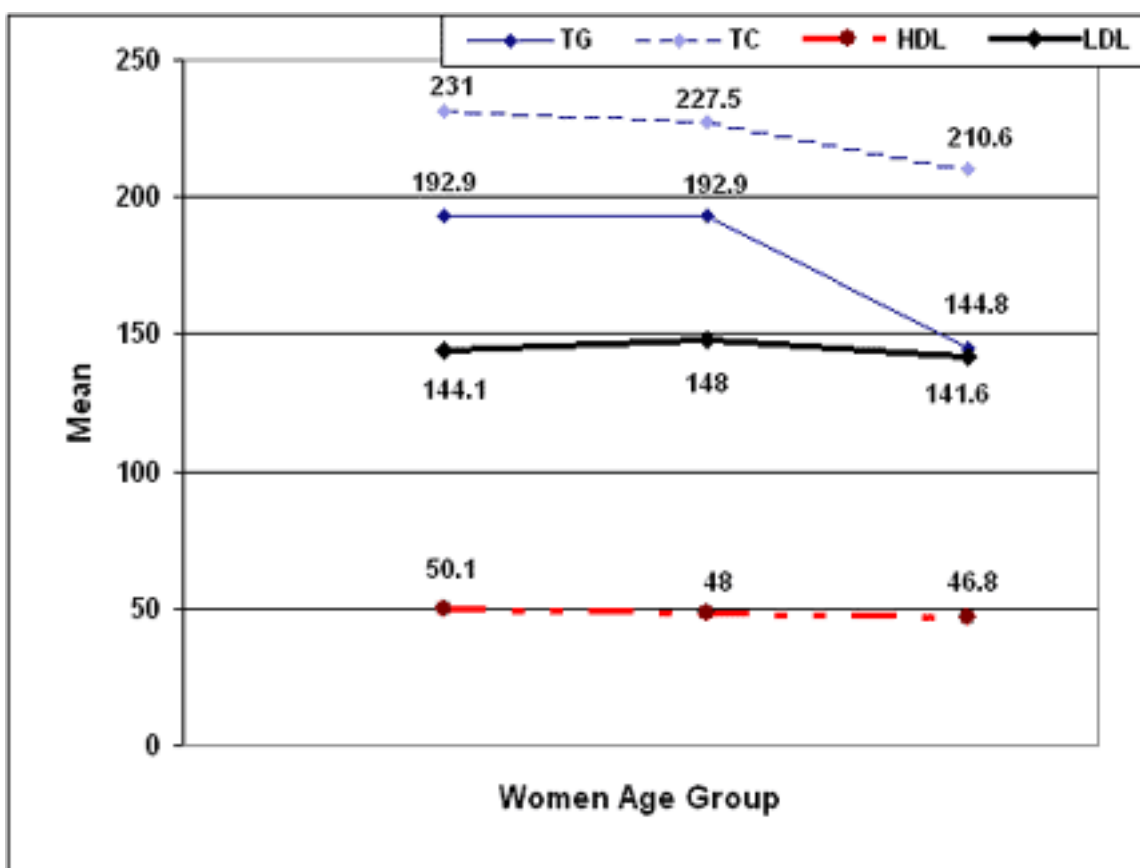
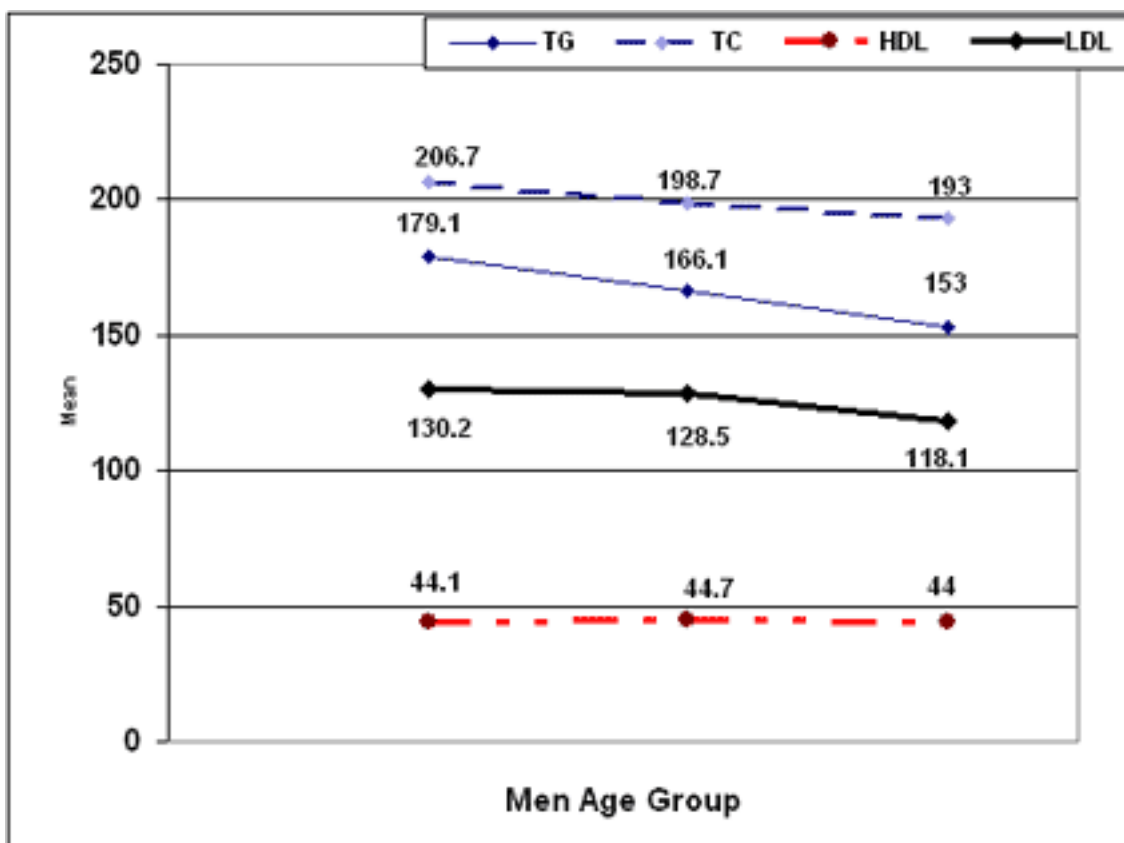


Chart 3





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# Foot abnormalities in diabetics: prevalence and predictors in Basrah

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## ABSTRACT

**Background:** Diabetic foot abnormalities are clearly one of the most important complications of diabetes mellitus (DM) and the leading cause of hospitalization with substantial morbidity, impairment of quality of life, and engender high treatment costs. The aim of this study was to estimate the prevalence of diabetic foot abnormalities among patients with type 2 DM and the predictors of these abnormalities in Basrah.

**Patients and methods:** This was a cross sectional study of patients attending the out patient clinic of two hospitals in Basrah (the General and the Teaching) for the period from January to the end of December 2005. All patients had type 2 DM.

**Results:** The total number of patients was 182 (80 males and 102 females). Diabetic foot abnormalities were reported in 46.7% of patients. Most patients had more than one abnormality. Structural foot abnormalities reported in diabetic patients were prominent metatarsal heads in 36.2%, wasting in 11.5% hammer toes in 10.9%, pes cavus in 5.4%, claw toes in 3.8%, and amputees in 2.1%. While skin changes included dryness of the skin in 17%, fissures in the skin in 14.7%, callosities in 14.2%, Tinea pedis in 13.7%, foot ulcer in 13.7% and nail changes in 7.1%. Peripheral neuropathy and dermopathy were seen in 21.9% and 6% respectively.

**Conclusions:** Variables predicting foot abnormalities were higher age, male sex, less school achievement, longer duration of DM, higher BMI, smoking history, low social class, insulin use, hypertension, heart failure and proteinuria.

**Key words:** diabetic foot, ulcer, prevalence, Basrah

## INTRODUCTION

Diabetic foot abnormalities are clearly one of the most important complications of diabetes mellitus (DM) and the leading cause of hospitalization with substantial morbidity, impairment of quality of life, and high treatment costs.<sup>1,2</sup> It not only occurs as a typical complication in the late stages of diabetes but also in patients with newly diagnosed DM.

Motor neuropathy leads to muscle atrophy, foot deformity, altered biomechanics of walking, and redistribution of foot pressures during standing and walking, which lead to callus.<sup>3,4</sup> Abundant callus formation on pressure points (which act like a foreign body and further increase pressure) together with thinning of the submetatarsal head fat-pads, additionally increases the force of plantar pressure and ultimately results in foot ulceration.

The risk of ulceration is proportional to the number of risk factors. The risk is increased by 1.7 in persons with isolated peripheral neuropathy, by 12 in those with peripheral neuropathy and foot deformity, and by 36 in those with peripheral neuropathy, deformity, and previous amputation, as compared with persons without risk factors.<sup>5</sup>

In developing countries, which will experience the greatest rise in the prevalence of type 2 DM in the next 20 years, people at greatest risk of ulceration can easily be identified by careful clinical examination of the feet. Education and frequent follow-up is indicated for these patients.<sup>6</sup> As the world is facing an epidemic of type 2 DM and an increasing incidence of type 1 DM, the International Diabetes Federation has chosen to focus on the global burden of diabetic foot disease in 2005.

Data on diabetic foot in Iraq are scanty and anecdotal.<sup>7</sup> The aim of this study was to estimate the prevalence of diabetic foot abnormalities among patients with type 2 DM and the predictors of these abnormalities in Basrah.

## PATIENTS AND METHODS

This was a cross sectional study of patients attending the out patient clinic of two hospitals in Basrah (the General and the Teaching) for the period from January to the end of December 2005. All patients had type 2 DM. Diabetes and hypertension was defined as self-reported physician diagnosis of diabetes and hypertension.<sup>8</sup>

For all patients history was taken including age of the patients, smoking status, job, and qualifications (years of school achievement). Social class was calculated, and each patient was classified into low and other socioeconomic status, based on the aggregate score of education, occupation, and income.<sup>9</sup> They were asked about duration of diabetes, medications, hospitalization and previous diabetic foot problems. Subjects reporting smoking at least one cigarette per day during the year before the examination were classified as smokers. All patients were examined for weight, height, blood pressure, body mass index (BMI), and calculated according to Quetelet formula (weight in kilograms divided by height in metres squared). Skin and peripheral pulsation were examined. Both feet were examined for structural foot abnormalities and skin changes.

Structural foot abnormalities were defined as follows: prominent metatarsal heads were defined as "any palpable plantar prominences of the metatarsal site of the foot," and high medial arch (pes cavus) as "an abnormally high medial longitudinal arch, which extends between the first metatarsal head and the calcaneus".<sup>4,10,11</sup> Extension contracture at the metatarsophalangeal (MTP) joint with flexion contracture at the proximal interphalangeal (PIP) joint is called hammer toe, while hyperextension of the MTP and flexion of the PIP and distal interphalangeal (DIP) joint is termed a claw toe. Wasting was considered when there is guttering between metatarsal heads.

Skin was examined for callus which was defined as any hyperkeratotic formation due to shear stresses, usually in proximity to a bony prominence. Dryness was assessed objectively; fissures were included as any skin break that does not fit for the definition of foot ulcer below. Nail changes included any longitudinal ridging, fissuring, separations, loss or thickening.<sup>4,10,11</sup> Diabetic foot ulcer was defined as any full-thickness skin lesion distal to the ankle excluding minor abrasions, fissures or

blisters. Interdigital fungal infection (Tinea pedis) was considered as any white, macerated skin between any web spaces.<sup>12</sup>

Metabolic control was according to American Diabetes Association (ADA) with fasting plasma glucose of 90-130 (5.0-7.2) mg/dL (mmol/L) and postprandial plasma glucose of less than 180 (< 10.0) mg/dL (mmol/L).<sup>13</sup> An average of at least 3 readings were taken.

Diagnosis of peripheral neuropathy was according to quantitative assessment of symptoms and physical finding according to others' practice.<sup>14</sup>

Electrocardiography (ECG) was done for all and urine examined for overt proteinuria. Proteinuria was diagnosed on the basis of persistent frank proteinuria without erythrocytes or white blood cells in urine. Electrocardiographic changes were considered according to practice.<sup>15</sup>

Heart failure diagnosis was based on history and physician diagnosis with echocardiography.

Continuous variables were summarized as the mean  $\pm$  SD. Categorical variables were summarized as percentages. For statistical analysis a chi-square test was used. A comparison of 2 means was carried out with an unpaired Student t test. The level of significance was set to be < 0.05 throughout the analysis.

## RESULTS

The total number of patients was 182 (80 males and 102 females), with mean age of 56 $\pm$ 8.4 year, and qualification of 2.5  $\pm$ 4 year (**table-1**). Duration of DM was 7.6 $\pm$ 6.1 year and BMI of 25.6 $\pm$ 2.5. Sixty eight point six percent were non-employed and 77.4% were from a rural area. Most subjects were from a low social class (86.8%). Their treatment was diet with oral hypoglycemic drugs in 73.6% and most had non-optimal glycaemic control (94.5%) according to ADA. Hypertension was present in 52.1% with heart failure in 20.8%, ECG changes in 63.7% and proteinuria in 26.3%.

Structural foot abnormalities reported in diabetic patients were prominent metatarsal heads in 36.2%, wasting in 11.5%, hammer toes in 10.9%, pes cavus in 5.4%, claw toes in 3.8%, and amputees in 2.1% (**table-2**). While skin changes included dryness of the skin in 17%, fissures in the skin in 14.7%, callosities in 14.2%, Tinea pedis in 13.7%, foot ulcer in 13.7%, and nail changes in 7.1%. Peripheral neuropathy and dermopathy was seen in 21.9% and 6% respectively.

Diabetic foot abnormalities were reported in 46.7% of patients (**table-3**). Most patients had more than one

abnormality. Variables that predict foot abnormalities (statistically significant) were higher age, male sex, less school achievement, longer duration of DM, higher BMI, smoking history, low social class, insulin use, hypertension, heart failure, and proteinuria.

## DISCUSSION

Foot abnormalities were reported in 46.7% in this study with mean age of 62±6.2 year. A population based study in Minnesota showed that most diabetic patients have foot problems after age 40 and that the incidence of these problems increases with age.<sup>16</sup>

The commonest structural foot abnormalities in our study were prominent metatarsal heads (36.2%), followed by wasting (11.5%), then hammer toes (10.9%) and claw toes (3.8%). These changes alter foot biomechanics which will increase risk of ulceration and amputation.<sup>17</sup>

In this study diabetic foot ulcer was present in 13.7% of patients. This alarmingly high figure, is comparable with the figure (11.9%) in Algeria.<sup>18</sup> To complicate the story of diabetic foot care in our area, we have no podiatry services available and since amputations are preceded by foot ulcers in 75-85% of cases.<sup>6</sup> These figures seems amazing, for the future amputation in our diabetics.

Commonest skin changes in the study were dryness of the skin followed by fissures in the skin and callosities. The explanation of these skin changes is autonomic neuropathy which is reflected by decreased sweating, loss of skin temperature regulation, and autotomy. Anhydrosis results in xerotic skin and predisposes skin to fissures, cracks, and callus formation.<sup>19</sup>

Predictors of foot abnormalities in this study were higher age, male sex, less school achievement, longer duration of diabetes mellitus, higher BMI, smoking history, low social class, insulin use, hypertension, heart failure and Proteinuria. Similarly ADA consensus group found that among persons with diabetes, the risk of foot ulceration was increased among men, patients who had had diabetes for more than 10 years, and patients with poor glucose control or with cardiovascular, retinal, or renal complications.<sup>17</sup> And the benefit of education in reducing diabetic foot ulcers and lower-extremity amputation is well documented.<sup>20</sup> In a large Italian case-control study possible risk factors for ulcer formation were, male sex, and lack of diabetes education.<sup>21</sup> While in Jordan amputation of the lower limbs correlates with duration of diabetes, poor glycemic control, smoking, neurological impairment, peripheral vascular disease and microalbuminuria.<sup>22</sup> Lavery et al, in a multivariate model, have also demonstrated that poor glucose control, duration of diabetes over 10 years, and male sex are also significant risk factors for foot ulceration.<sup>5</sup>

## CONCLUSION

Diabetic foot abnormalities were reported in 46.7% of patients. Variables predicting foot abnormalities (statistically significant) were higher age, male sex, less school achievement, longer duration of diabetes mellitus, higher BMI, smoking history, low social class, insulin use, hypertension, heart failure and proteinuria. We are calling for organization of the foot-care service in Basrah, and education should be tailored to the patient's understanding and social background to manage an epidemic of foot abnormalities expected to be seen in the near future.

**Table 1** Patient's characteristics

Variables		No.(%)
Number(No.)		182 (100)
Sex	Male	80 (43.9)
	Females	102 (56)
Age(years) mean±SD		56±8.4
Qualification (years of school achievement) mean±SD		2.5±4
Duration of diabetes mellitus mean±SD		7.6±6.1
BMI mean±SD		25.6±2.5
Smoker		34(18.6)
Employment Employed		57(33.1)
Non -employed		125(68.6)
Residency Urban		41(22.5)
Rural		141(77.4)
Social class Low		158(86.8)
Other social class		24 (13.1)
Treatment /diet alone		30 (16.4)
Treatment/ oral hypoglycemic agents		134 (73.6)
Treatment/ insulin with or without oral drugs		18 (9.8)
Glycemic control	Non-optimal	172 (94.5)
	Optimal	10 (5.4)
Hypertension		95 (52.1)
Heart failure		38 (20.8)
ECG changes		116 (63.7)
Proteinuria		48 (26.3)
Past history of diabetic foot		7 (3.8)



**Table 2** Foot abnormalities

<b>Abnormalities</b>	<b>No. ( %)</b>
<b>Structural foot abnormalities</b>	
Prominent metatarsal heads	66 (36.2)
Wasting	21 (11.5)
Hammer toes	20 (10.9)
Pes cavus	10 (5.4)
Claw toes	7 (3.8)
Amputees	4 (2.1)
<b>Skin changes</b>	
Dryness of the skin	31 (17)
Fissures in the skin	27 (14.7)
Callosities	26 (14.2)
Tinea pedis	25 (13.7)
foot ulcer	25 (13.7)
Nails changes	13 (7.1)
<b>Others</b>	
Peripheral neuropathy	40 (21.9)
Dermopathy	11 (6)

**Table 3** Predictors of foot abnormalities

<b>Variables</b>	<b>Foot abnormalities No. ( %)</b>	<b>No foot abnormalities No. ( %)</b>	<b>P value</b>
No.	85	97	0.7
Age mean±SD	62±6.2	50.7±6.1	<0.0001
Sex	Males	52(61.1)	28 (28.8)
	Females	33	69
Qualification (years of school achievement) mean±SD	1±2.1	4.5±4.5	<0.0001
Duration of diabetes mean±SD	11±6.9	4.6±2.9	<0.0001
BMI mean±SD	26.5±2.5	24.8±2.2	<0.0001
Smoking	26(30.5)	8(8.2)	0.0002
Employment	Employed	23	34
	Non -employed	62	63
Residency	Rural	68	73
	Urban	17	24
Low Social class	81	77	0.003
Insulin use	13(15.2)	5 (5.1)	0.04
Non- optimalglycemic control	82	90	0.4
Hypertension	63(74.1)	32 (32.9)	<0.00001
Heart failure	32	6	<0.00001
ECG changes	60 (70.5)	56 (57.7)	0.09
Proteinuria	31 (36.4)	17 (17.5)	0.006

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# Herbal Treatment Usage Frequency, Types and Preferences in Turkey

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## ABSTRACT

Alternative treatment usage is increasing around the world although treatment methods are becoming more modern and more drugs are made available. Related to these global changes we aimed to determine the incidence of treatment with herbs, an alternative treatment method, in Turkey and the reasons for its usage. The study was carried out with a questionnaire on the Internet which 19,022 persons who had received preliminary information, completed. After the subjects were informed of the study, the analysis of medicinal plants by the participants between January 1, 2004 and December 31, 2004, at the web site where they completed the questionnaire was recorded and evaluated. 75.9% of those participating in the study reported that they had used a herbal medication at least once. The main health problems leading to the usage of herbal medication for their treatment was hair loss - hair care, hemorrhoids, skin care, peptic ulcer - gastritis and infertility. The plants the participants were most interested in were nettle, St. John's wort, rosemary, garden sage and hawthorn. The main reason for interest in herbal treatments was "hoping to find a herbal medicine which could help treat their condition". Nettle, oleander and thyme were the plants most commonly used to treat cancer patients. Turkey has a higher rate of alternative medicine usage than other countries where similar studies have been conducted and comprehensive and regular studies are required to show changes over time.

**Key Words:** herbal medicine, alternative therapies, traditional medicine

## INTRODUCTION

Alternative treatment methods have been used for the treatment of disease and to improve health for hundreds of years. Studies on the incidence of alternative treatment usage in the community have shown a constantly increasing rate [1]. It is reported that 42.1% of the U.S. population use alternative treatment method. The cost of alternative treatment has been calculated as USD 22.6 billion for 1990, increasing to USD 32.7 billion for 1997 [2]. Another study from the same country has revealed that 33.8% of the people spend more on alternative treatment methods than they do on conventional treatment methods [3]. The rate of having used an alternative

treatment method at least once is 48% in Australia, 70% in Canada, 38% in Belgium, 90% in Germany and 75% in France [4]. While there are no comprehensive studies to show the rate of alternative treatment usage in Turkey generally, some local studies in treatment centers, mostly concerned with chronic disease, have shown that alternative treatments are used by a high percentage of the patients. For example, studies on cancer patients have shown alternative treatment usage rates of 41.1%, 50.0% and 61.0% [5, 6, 7]. Plants were the most commonly used alternative treatment method in all three studies. Another study with allergic patients has shown that 38.0% use alternative treatment methods, usually with plants [8].

Although modern treatment methods are being developed rapidly and many new drugs are produced, patients seem to use alternative treatment methods at an increasing rate [2,4]. The main reasons for this tendency are: (a) dissatisfaction with the results obtained from health carers and related institutions, (b) discomfort because of the side effects of drugs and other treatment methods, (c) financial cost of the treatment (especially medication) and care services, (d) not having a say in their health status and their treatment and (e) treatment that is technological and not individualized [9,10]. However, not being able to access health care should also be seen as an important factor for the usage of alternative treatment methods, especially in developing countries. For example, the percentage of those who are not able to access health care and use alternative treatments is about 80% in Africa [4]. Another aspect of alternative medicine methods is that they have cultural and traditional properties. Some alternative treatment methods may therefore be kept locally and the usage rates found by studies may be much lower than the actual rate [2,4].

The preferred alternative treatment method changes from country to country. While acupuncture is used commonly across the world [4,11], the most commonly used alternative treatment methods in the U.S.A. and Canada are massage, chiropractic manipulation, vitamin-mineral support and acupuncture [3,12,13]. Studies from Turkey have shown that herbal medicine usage is more common as an alternative treatment method [5,6,7,8]. We therefore aimed to determine the rate of herbal medicine usage in Turkey and why and how it was used.

## MATERIAL AND METHODS

The study was carried out between January 1, 2004 and December 31, 2004. A total of 19,022 people were informed by e-mail at the beginning and invited to participate in the study. The e-mail had concise information on the study and the subjects were asked to visit the internet address containing the questionnaire and complete the form. The Internet Protocol (IP) numbers of those visiting the internet address were logged to prevent the same person from completing more than one questionnaire. The participants were asked their preferred herbal treatment methods, any herbal treatment methods for cancer treatment they knew of or had heard of, and their age and sex. The results of participants under 18 were not recorded and not included in the study. The study is of the descriptive type and MS Access software and SPSS for Windows version 11.0 was used to evaluate the results. The questions included in the questionnaire are shown in **Table 1**.

## RESULTS

13,025 of the 19,022 study subjects answered the questionnaire but 3,132 responded that they had never used herbal treatment methods and did not continue with the other sections. As a result, the completed questionnaires of 9,893 subjects were considered valid and included in the study. This shows that 75.9% of the participants had used a herbal treatment method at least once.

48.4% of the participants were female and 51.6% male with an average age of  $31.3 \pm 9.1$  ( $30.6 \pm 8.8$  for the females and  $32.0 \pm 9.5$  for the males). We had participants from all 81 Turkish provinces. Most participants were from Istanbul, Ankara or Izmir (17.5%, 13.7% and 10.9% respectively).

The 9,893 persons successfully completing the questionnaire also recorded their primary concerns about medical herbs and medical conditions which they look for herbal treatment. Associated or similar conditions or health problems that the participants obtained information on were grouped. The conditions/health problems the participants were most interested in were hair loss and hair care, hemorrhoids, skin care, peptic ulcer - gastritis and infertility (**Table 2**). The medicinal plants the participants were most interested in were nettle, St. John's wort, rosemary, garden sage and hawthorn (**Table 3**).

2,948 participants answered the question "What herbal treatment methods are used in your community for treatment of cancer?". The ten plants used most frequently in the community for cancer treatment were (in order of reported frequency) nettle, oleander, thyme, flaxseed, garlic, mint, cabbage, fennel, dog rose and mistletoe. Nettle was reported by 44.9% of those responding to this question.

The participants were asked why they were interested in herbal treatment methods and the most common answer with 32.6% was that they hoped it would help the treatment of themselves or someone they knew. Using herbal treatment for financial reasons was the least frequent answer at 3.8%. It was interesting that 26.9% of the participants stated that they did not have a health problem at the moment and were interested in herbal treatment only because they were curious about the subject.

## DISCUSSION

Of the 19,022 subjects sent information on the study, 13025 (68.4%) were willing to participate. 75.9% of the

participants reported that they had used a herbal treatment method at least once. When we take into consideration that the main conditions for participating in the study were to have an email address and to be able to access the Internet, the participants would be expected to have a high socioeconomic status level and to not reflect the country population in general. However the following led us to believe it is possible to project the group's results to the general community: the ages of the subjects that were sent emails varied widely (18-83 years), members and participants were present from every province of the country and the sex distribution was balanced (48.4% males and 51.6% females). The web site which accepted members had various sections (history, entertainment, general culture, news, etc.) in addition to health and medicinal plants and this also made it possible to obtain information from the general community. We can therefore say that 75.9% of Turkish people over 18 years of age have used a herbal medication at least once according to this study.

When we compare our results with those from other countries, it is seen that the percentage of those who have used a herbal medication at least once in Turkey is higher than the rate of alternative treatment usage in countries such as the U.S.A., Australia, Canada, Belgium and France [2,4]. The studies carried out in the above countries have determined the rate of usage for all alternative treatment methods and this rate is therefore much higher in Turkey.

Although studies on the frequency of alternative treatment usage in Turkey are usually interested in the treatment of chronic disease such as cancer [5, 6, 7] and allergies [8] our results indicate that the most common condition for which information was obtained over the year for herbal treatment was hair loss and hair care (5.4%). It may therefore be stated that most of the community is interested in using herbal medication for cosmetic reasons. The main reasons for this may be the emphasis placed on herbal/natural additives in advertisements, the high cost of cosmetic applications, and the common interest in cosmetic applications by rich and poor alike. Hemorrhoids were second in the list of the diseases gathering the most interest with 4.1% and this could be due to a reluctance to be examined. **Table 2** shows that only 1.06% of the subjects accessed during the year were related to cancer and other associated conditions. The community seems to be using herbal treatments more for cosmetic reasons and for conditions that could generally be prevented with preventive measures than chronic medical conditions that currently have a high mortality. The most accessed health-related subjects, shown in **Table 2**, provide information on both herbal

treatments and the general condition of the society. The fact that complaints related to peptic ulcer, gastritis and other similar problems were placed third may be an indication of the preference for spicy, hard-to-digest food containing lots of fat in many parts of the country. Health problems such as infection and high fever and more serious conditions requiring urgent treatment such as myocardial infarction and angina, were not investigated by the participants and this is a positive indication of the community's approach to health-related matters.

Nettle was the medicinal plant investigated most often by the participants throughout the year (**Table 3**). Nettle is also prominent worldwide among the medicinal plants: it has been shown to be the alternative treatment method used most often by cancer patients in Turkey [5, 7], it is consumed as food in many parts of the country [14] and it has been used in many parts of the world to treat conditions such as arthritis, anemia, asthma, diabetes mellitus, hypertension, hemorrhoids, heavy menstrual bleeding, gout, neuralgia, prostate hypertrophy and hair loss [15, 16, 17]. Research has also shown that it has an inducing effect on T-lymphocytes [18, 19]. It will be beneficial to investigate all of these properties of nettle in a comprehensive manner, combine scientifically valid information on its efficacy and usage, to convert the plant into medicinal form if appropriate and enable modern medicine to take advantage of its properties. Other plants frequently investigated by the participants during our study were also plants investigated and used widely worldwide (**Table 3**) [15, 16, 17].

We thought early in the study that the main reason for using medicinal plants would be chronic diseases with a high mortality rate such as cancer and asked participants "What herbal treatment methods, if any, are used in your community for cancer treatment?" and 2,984 participants responded. 44.9% of those answering this question stated that nettle was used for cancer treatment in their community. Most plants used for cancer treatment were generally well-known and studied plants (**Table 4**). However some (seven) participants from Southern Turkey stated that the myrtle plant was also used for cancer treatment in their community. This plant has generally been studied in relation to diabetes mellitus treatment [20] and we did not find any note on its anticancerogenic effect on MEDLINE.

When the participants were asked why they were interested in herbal treatment methods, 32.6% answered that they were hoping they would help the treatment of themselves or someone they knew (**Table 4**). However, other studies have shown discontent with the healthcare service received as the top reason [9, 10]. While financial



difficulties were one of the main reasons for preferring alternative treatment methods in previous studies, they were last among the reasons in our study. The option ‘I am not ill but I am interested in herbal drugs to live better’, not present in previous studies, was selected by more than 20% of the participants and may indicate that people want to decide how to improve their health.

Although it is commonly believed that most current drugs are synthetic in origin, six of the 20 most commonly prescribed drugs in 1996 were natural products and 50% of these [20] drugs were associated with natural ingredients, showing the importance of herbal products in drug production and usage [21]. Although herbal drugs are investigated extensively, especially for the treatment of cancer, viral disease and infertility, inadequate information is being released due to the intense competition in the drug industry [21]. Comprehensive studies on the community usage of drugs are therefore extremely important and should be repeated often and with a wider scope.

In conclusion, Turkey has a higher rate of alternative medicine usage compared to other countries where similar studies have been conducted and comprehensive and regular studies are required to show changes over time. Scientific and academic institutions should take the initiative to prepare comprehensive sources of scientific information on the Internet, one of the easiest ways to access information, in the country’s own language to prevent the community from obtaining false information on alternative treatment methods and medicinal plants and being misdirected. used most frequently in the community for cancer treatment were (in order of reported frequency) nettle, oleander, thyme, flaxseed, garlic, mint, cabbage, fennel, dog rose and mistletoe. Nettle was reported by 44.9% of those responding to this question.

**Table 1. Questions included in the questionnaire**

1. Age: ..... years
2. Sex: Male      Female
3. Your province .....
4. Have you ever used a herbal treatment method? Yes      No
5. Why are you interested in herbal alternative treatment methods? a) For treating a condition in myself or someone I know b) Because I am, or someone I know is, ill at present and I do not believe that the medication used to treat the condition will provide any benefit c) Because I believe I can lead a healthier life by using herbal methods d) Because I do not trust drugs and modern treatment methods e) Because I don't have the financial means or social support to purchase drugs f) Because I am interested in herbal treatment
6. What herbal treatment methods, if any, are used for cancer treatment in your community? .....

**Table 2. The 10 Most Commonly Studied Conditions/Health Problems**

Condition/Health Problem	Number Studied	Percentage Among Diseases Studied
Hair loss and hair care	16867	5.40
Hemorrhoids	12822	4.10
Peptic ulcer - gastritis	12132	3.88
Skin care	10894	3.49
Infertility	7073	2.26
Obesity	4312	1.38
Rheumatoid disease	3793	1.21
Constipation	3714	1.18
Insomnia	3546	1.13
Cancer	3329	1.06

**Table 3. The 10 Medicinal Plants Examined Most Frequently**

Medicinal Plant (Latin name)	Common Name	Number of Times Examined	Percentage Among Conditions Examined
<i>Urtica</i> spp ( <i>U. Dioica</i> & <i>U. urens</i> )	Nettle	7928	4.38
<i>Hypericum perforatum</i>	St. John's wort	3601	1.99
<i>Rosmarinus officinalis</i>	Rosemary	3301	1.82
<i>Salvia officinalis</i>	Garden sage	2747	1.51
<i>Crataegus</i> spp	Hawthorn	2642	1.46
<i>Melisa officinalis</i>	Lemon balm	2623	1.45
<i>Thymus vulgaris</i>	Thyme	2498	1.38
<i>Capparis spinosa</i>	Caper	2475	1.36
<i>Matricaria chamomilla</i>	Chamomile	2410	1.33
<i>Cinnamomum zeylanicum</i>	Cinnamon	2284	1.26

**Table 4. The Top 10 Plants Reported as being used for Cancer Treatment**

Medical Name (Latin name)	English name	Number of Reports	Report Percentage
Urtica dioica	Nettle	1340	44.9
Nerium oleander	Oleander	171	5.7
Thymus vulgaris	Thyme	148	4.9
Linum usitatissimum	Linseed	140	4.6
Allium sativum	Garlic	130	4.3
Mentha spicata	Spearmint	130	4.3
Brassica oleracea	Cabbage	120	4.0
Foeniculum vulgare	Fennel	115	3.8
Rosa canina	Dog rose	114	3.8
Viscum album	Mistletoe	114	3.8

**Table 5. Distribution of the answers to “Why are you interested in herbal alternative treatment methods?”**

Answer Options	Number	Percentage
Because I hope it may be useful for the treatment of myself or someone I know	3227	32.6
Because I am interested in treatment using only herbs	2667	26.9
Because I believe I will be able to lead a healthier life by using herbal methods	2142	21.7
Because I did not observe any benefit of the medication I used or modern treatment methods	774	7.8
Because I do not trust drugs and modern treatment methods	710	7.2
Because I do not have sufficient financial means or social support to purchase drugs	373	3.8
TOTAL	9893	100.0

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# The Pattern of International Relationship in University Students in Persian Culture

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## ABSTRACT

Little research has investigated the interpersonal relationship characteristics in Persian culture. A 24-item Interpersonal Relationship Inventory yielded a factorial structure based on the 4 domains of interpersonal relationship: family, friend, extended (non-familiar), and personal. For the study totally 246 subjects (pilot-study=102, main-study=144) were considered. They were university students in Iran. It has been found that the domain family relationship of interpersonal relationship was the most dominant factor followed by the friend relationship. Therefore interpersonal relationship was found to be more influenced by the family and friend relationship elements of the ingroup structure (such as family, parents, and friends). The results indicated that the relationship of family factors to the intimate relationship of young adult university students has greater adaptability in the family system during adolescence.

**Keywords:** Interpersonal relationship, Persian culture, university students

## INTRODUCTION

Individuals typically focus on the development of intimate relationships during late adolescence and early adulthood (Aylmer, 1989; Erikson, 1963, 1968). Successful resolution of the issue of intimacy enables the young adult to maintain committed, enduring intimate relationships (Orlofsky, 1993). The transition to college is the first time away from home for many adolescents (Balk, 1995). With this major life change, adolescents face the challenges of establishing a sense of identity and renegotiating relationships with caregivers (Erikson, 1968). More recently, however, attention has been given to the role of attachment relationship with family as adaptive in adolescence (Gilligan, 1982; Grotevant and Cooper, 1985; Josselson, 1988) and influential in identity development.

Most research in the area of adolescent attachment relationship has examined the influence of secure parent-adolescent attachment on developmental outcomes in adolescents (Armsden and Greenberg, 1987). The parent-adolescent relationship has been found to be an influential factor in adolescents' support-seeking and active problem-solving coping styles (Greenberger and McLaughlin, 1998) in addition to early adolescents' self-esteem (Harvey and Byrd, 1998). Academic and emotional adjustment in college is also associated with

secure parent-adolescent attachment relationship (Lapsley *et al.*, 1990; Rice *et al.*, 1995).

The investigation of the structure and meaning of interpersonal behavior in different cultures has been an important component of cross-cultural research in psychology for many years. The reason for the centrality of this topic is fairly obvious: interpersonal behavior forms the core of human daily activity, and, thus, it seems inevitable that culture will influence it greatly. In fact, we can safely assume that culture and interpersonal behavior constitute each other in that it is hard to think of one without referring to the other (Adamopoulos, 2002). Over the past thirty years, Triandis and his colleagues have investigated, among other aspects of subjective culture, the manner in which people perceive and ascribe meaning to interpersonal behavior (Triandis, 1972, 1994).

The themes of dominance and intimacy are probably the most central in defining the nature of an interpersonal relationship. For this reason, we need to consider the other concomitant relational interpretations beyond dominance ones. In the structure of people's interpersonal relations, one would presumably find a very coherent pattern. Heider (1958) argued that people tend to achieve patterns of interpersonal relations that can be described as balanced triads. The difference in social interaction may be attributed to differences between the



societies in belief systems, shared values, social cognitive processes, and affective meaning (Leung *et al.*, 1997).

Despite such awareness that the issue of social interactional pattern may not be studied without realizing the cultural context for an individual, relatively lesser studies were conducted in the societies which are collective in nature. Dadkhah, Harizuka, and Mandal (1999) presented 3 factorial inventory with a data-base for cultures of societies which were little explored in terms of the understanding of social interactional patterns.

The aims of the present study were (a) to find out the pattern of intimate relationships during late adolescence (college and university period), attachment relationship with family, and dominance and intimacy relationship in Persian culture society, an interpersonal relationship inventory was developed and standardized culture and (b) to examine the dominant domains of interpersonal relationship in this society with reference to the embedded factor structure of such an inventory.

The development of an interpersonal relationship inventory would help us to understand the manner in which people perceive and ascribe meaning to interpersonal behavior in order to form a data base in this kind of society.

## METHOD

**Subjects** - For the study totally 246 subjects (pilot-study=102, main-study=144) were considered. They were university students and had no history of other neurological disorders. Subjects were also matched closely to socio-economic status. This sample was stratified on the basis of subject characteristics.

**Procedure** - In the beginning, a 47 item inventory with a 5-point Likert type rating scale, ranged from 1 (extremely uncharacteristic) to 5 (extremely characteristic), was developed on the different domains of social behavior. These items included both approach and avoidance behaviors in different situations for social cognitive and affective events.

After pilot work, it was administered to 102 subjects (Mean age 29 yr). They answered on a range from 1 to 5. The resulting correlation matrix was evaluated against the three criteria of suitability for factor analysis. These three factors, selected with a criterion of an eigenvalue of 2.00, accounted for 39.8% of the variance.

For examining the suitability for inclusion, the items were submitted to the three subject experts who were made aware of the purpose, goal, and concept behind the inventory. The commonly selected items, 34 altogether, were thus retained. These items were then given to language experts for making editorial corrections. Certain items were retranslated in the process to retain the psycho-linguistic properties. The format of the inventory changed according to the response format, lie scores were chosen and the relevant questions were repeated, and finally the reverse scores were determined. This version of the inventory was then administered to a relatively heterogeneous sample of 144 (Mean age 24.6 yr., SD 6.67 yr.) university students.

## RESULTS

Subjects' responses, taken on a 5-point rating scale, were then scored (higher the score, greater was the interpersonal relationship) and tabulated to create a 34 x 34 inter-correlation matrix which was then treated with principal component factor analysis and rotated with Varimax method. The minimum loading of .52 was accepted for the items to be retained in the factorial structure. The analysis yielded four factors in terms of social interactional domains. Altogether 24 items were retained and 10 items were found to be redundant. Loadings of items on the four factors were shown in **Table 1**.

Factor I (eigenvalue 5.8, % variance 12.4) constituted of those items (I like talking with my family members, I want to spend my time with my family members, I like to discuss many things with my family members, I am happy to enjoy or work with my family members, I usually talk with my family members, I talk with my parents) refer to family interaction and thus labeled 'family relationship'.

Factor II (eigenvalue 5.13, % variance 10.9) was labeled as 'friend relationship' as these items (I like talking with my friends, I talk with my friends, I like to share my thinking with my friends, I am happy to enjoy or work with my friends, I remember the things happened to my friends, I like to spend my time with my friends). The cluster of items (I talk and remember my earlier experience with others, I like to think about many things with others, I want to talk with unfamiliar people, I would like to ask others to do my affairs, I like to enjoy or work even with others, I would like to spend my time with unfamiliar people) that constituted

Factor III (eigenvalue 5.06, % variance 10.7) reflected interaction with those persons who are not known to the

respondent (outgroup). This factor was thus labeled as ‘extended relationship’.

And factor IV (eigenvalue 4.38, % variance 9.3) constituted of those items refer to personal interaction and labeled ‘personal’. The test - retest reliability of the 28-item interpersonal relationship Inventory (SII) was evaluated on a sample of 35 subjects with a retesting interval of 3 weeks (Pearson’s  $r = .79$ ).

**DISCUSSION**

It has been found that the domain family of interpersonal relationship was the most dominant factor followed by the friend relationship. Therefore interpersonal relationship was found to be more influenced by the family and friend relationship elements of the ingroup struc-

ture. In light of the saliency of relationship and identity development in adolescence, these findings have various implications for college counselors and student services aimed at facilitating college adjustment and identity development. The findings add to the growing belief that continued parental involvement can be healthy for an adolescent and may serve as the “secure base” as Bowlby (1982) and Ainsworth (1982) suggested.

In summary, as the major purpose of this study was to create a data-base in terms of dominant domains in the interpersonal relationship pattern in the country which heritages Persian culture, the present study offered a data-base for cultures of society which were little explored in terms of the understanding of interpersonal relationship patterns. These findings should underscore the need for further exploration of the intimate relationships of young adults in different cultures.

**Table 1. Factor loadings of Interpersonal Relationship Inventory (N=144)**

Items	Factor loading	Factor loading
<b>Factor I: Family relationship</b>		
I like talking with my family members.	.800	
I like to discuss many things with my family members.	.791	
I am happy to enjoy or work with my family members.		.791
I want to spend my time with my family members.	.791	
I usually talk with my family members.		.775
I talk with my parents.*	.753	
	.680	
<b>Factor II: Friend relationship</b>		
I like to spend my time with my friends.*	.734	
I talk with my friends.	.691	
I like to share my thinking with my friends.	.684	
I am happy to enjoy or work with my friends.	.661	
I remember the things happened to my friends.	.599	
I like talking with my friends.	.586	
<b>Factor III: Extended relationship</b>		
I would like to spend my time with unfamiliar people.	.756	
I like to enjoy or work even with others.		.745
I talk and remember my earlier experience with others.	.745	
I like to think about many things with others.	.717	
I want to talk with unfamiliar people.		.706
I would like to ask others to do my affairs.	.678	
	.581	
<b>Factor IV: Personal</b>		
I like to spend my time on my own.*	.715	
I care about my body build/posture when I am with others.	.670	
I want to be alone.*		.669
I care about my body build/posture when I am with my friends.	.669	
I feel comfortable when I am alone.*	.632	
I like to learn or enjoy on my own.*		.625
	.559	

\* Reverse score

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# Health Care System in Pakistan

## Authors:

**Dr Manzoor Butt**

Health Care Providers in Pakistan can be categorized into the following groups;

### 1) Medical Doctors

To become MBBS doctor, the candidate must full fill the following criteria;

1. Pass intermediate examination in Pre-Medical sciences (about twelve years study; ten in schools, two in colleges) with at least more than 60 to 70 % marks.
2. Enter in "Entry Test" and qualify it
3. Take five years course from a medical college that is recognized by Pakistan Medical & Dental council
4. Pass four professional examinations organized by University and held in medical college and teaching hospitals.
5. Get license from Pakistan Medical & Dental council

Pakistan Medical & Dental council is an authority which sets courses for MBBS and makes sure that the Medical Colleges are worth studying. It consists of Chief Justice of Federal Supreme court, chief justices of all provincial high courts, all provincial Governors and Principals of all recognized medical colleges.

Then, the qualified doctor completes one year residential house job in one or two teaching hospitals. After this, he/she is ready and eligible for a job or private practice. Family Physicians play the largest part in the delivery of primary care. They are the first contact of people who not only seek their help for primary care but also in acute emergencies and accidents. There is no organized Family Medicine in Pakistan. The Family Physicians work in a random manner and they have no working relationship with each other. They do not provide evidence based care to people. Many Family Physicians are involved in taking kick backs from pharmaceutical companies, pathological laboratories and private hospitals. They do not write proper prescriptions and use multiple medicines and injectables in a very irrational way. There is no definite system of referral and follow up; patients are usually referred when they become critically ill.

### 2) The Alternate Medical Services

In addition to going to Registered Family Physicians,

people do go to Registered Hakims (traditional healers), Registered Homeopaths and quacks in vast numbers. There is a situation of rivalry between various types of primary care providers. The Hakims (traditional healers) and Registered Homeopaths are free to make/manufacture any medicine because drug policy does not cover them. They are only legal and our presidents and prime ministers even go to them. People have a strong belief that these two types of treatment are quite harmless and more effective than our scientific medicines.

There are two very popular misconceptions in Pakistan, even in highly qualified persons and some MBBS doctors as well;

1. Sexual problems, Hepatitis A, B, & C are not curable by any other medication except the Hakims.
2. Homeopathy is very safe in chronic ailments, especially renal stones, arthritis, etc.

To become Hakim, there is no need of any basic general education but the famous Hakims are usually Graduates or Master degree holders in non-medical education. They categorize them selves as A-Class, B-Class and C-Class.

To become a Homeopathic doctor, the candidate must full fill the following criteria;

1. At least ten years of study in school
2. Four years course called "DHMS" from any out of hundreds of private colleges scattered throughout the country.
3. All who qualify, get registered in their counsel.

These people use ultra-sound machines themselves and avail pathology labs and all available diagnostics including CT-scan and MRI. They buy time on famous private TV channels and popular FM radios to project themselves and their work. Every such doctor claims himself to be a new inventor and researcher. (One month ago, they showed a senior MBBS doctor suffering from Type-2 DM who could not be controlled by modern medicines and how they controlled his blood glucose - the doctor admitted that only he was fine but also he was not observing any diet restriction}

### 3) Traditional Quacks

They are endemic in our society. There have been many half-hearted efforts to eliminate them but they are on the rise.

### 4) Religious Quacks

Traditional Quacks have been a major threat to the health system for quite long but now a new category of quacks is emerging that consists of so called religious persons who not only give blessings but also dispense their own made medicines. They are very famous for treatment of Hepatitis A, B, & C.

### The Paramedical Staff

#### A) Female Paramedics :

The following categories which are included under this term "Nurse" in Pakistan ;

1) Classified Nurse: The female must have passed high school examination in science to get admission into this course. She takes a four years' course in Nursing during which she has to reside in hospital. She does not pay anything for it rather she is given an attractive monthly help throughout the course. Despite all these facilities, only girls from poor background enter these courses. Such nurses are only present in big city governmental hospitals and very expensive private hospitals. Due to proper education and training, they work ethically and are aware of the importance of working within their own limits.

2) Lady Health Visitor (LHV): The female must have passed high school examination in science to get admission into this course. She takes a short course of about two years and she is basically trained in womens' health and midwifery. They are meant for villages and towns but are rarely found there. They usually practice in cities as lady doctors. Most of them exceed their limits and are involved in criminal abortion.

3) Locally Trained Nurses: This is the most available variety. Some of them are high school pass but most of them are usually middle passed or less. They are neither adequately educated nor properly trained. They are absolutely not aware of their limits. They work in clinics and most of the private hospitals. Seniors among this category work as lady doctors and are involved in criminal abortion.

4) Lady Health Worker (LHW): This type was produced by the government to induce health education and create

awareness about womens' health. Females should be only middle pass and a local resident. Unfortunately, they also forget their limits and start acting as lady doctors.

5) Midwives or Traditional Birth Attendants (TBA): In Pakistan, TBAs are absolutely uneducated and non-trained. They not only are unaware of their limits but also do not understand the importance of the referral network. They are a major cause of maternal mortality and morbidity. They cause damage to mothers and newborns due to lack of knowledge and skills. They do not understand the importance of sterilization and use dirty hands on women and on newborns. They cut umbilical cords with non-sterilized knives and tie it with dirty pieces of cloth or thread. They insert harmful weeds and their own made medicines in the vagina and freely inject Oxytocin I/M as a tonic or power injection before delivery.

#### B) Male Paramedics

25 % of this group are qualified but 75% are just locally trained in clinics and pathology labs. We do not have life saving paramedics except in the army.

#### C) Highly Trained Mobile Paramedics

This is a very recent addition to the system. At the moment, these are only found in Lahore. These are fully qualified.



## THE EYES OF THE TRUTH PART 2

### Authors:

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Iraq teetered on the edge of the abyss even before the bombs began to drop. While watching war coverage on TV, one is barraged by a numbing litany of appalling statistics showing the number of the victims either because of the oppression of Saddam's regime (confirmed by the disclosure of the mass graves) and by the direct impact of the unprecedented strict sanctions imposed on the Iraqi people for more than long 12 years and most of the prey were children. Also the corruption in the oil for food program that accompanied this blind punishment needs no discussion. During the war the civilians again were the fuel of the collateral damages resulting from the military activities. The chaos of the postwar crippled the rudimentary infrastructure and till now after 3 years, the crisis is unsolved. On the contrary now the killing enemy is unidentified but the target is still the civilians and the situation is volatile and unpredictable. How to end the cycle? Where to begin is a hard question. The best efforts disappear into a gaping maw of endless need. If we take a triage approach then stability and rebuilding are intertwined goals. Before that political chaos disrupts any initiative and in the absence of a national unity government little can be done to create a lasting change. Iraq's most important resource is it's capable resilient people, therefore they are targeted. Specifically to the plight of physicians: many of them abandoned, others are killed and others left the country and the remaining are struggling with poor basic facilities and rudimentary infrastructure combined with outdated information and communication technologies, which continue to bottleneck any thinkable plan for progress. Added to this are the crippling staff deficiencies, organizational and administrative failure, minimally supervised professional training, coupled with lack of motivation and incentives. All of these collectively operate on a mosaic of uncompromisable health related cultural dogmas and social ideologies, illiteracy and poverty. Left unchanged the soils of this country will inevitably remain infertile for seeds of raising enterprises to implant let alone to take root and flower. Here, with this background a nagging question spring's to one's mind: How could this multifaceted problem benefit from a multidisciplinary, multidimensional approach. A caveat at this point is in order. My answer that follows is meant neither to be inclusive of everything that must be carried out nor exclusive of other valid methodologies or tactics. First and foremost it behoves

that governments in the developed countries flex their legislative and executive muscles to be more involved in the fullest sense of the word in improving the status quo of physicians to close the gap which is alarmingly growing very rapidly between and them and the rest of the world. They have to run in order to just remain in the same place. Secondly to take the bull by the horn and overcome their conceptual vision which is clouded with uncertainty, skepticism and reluctance. Thirdly the issue, which is highly charged and tends to produce more heat than light is the medical research. I call THE WORLD BANK and other United Nations agencies to conduct a campaign sponsoring training programs involving large numbers of physicians. It is one of the few activities which when carried out and exploited well, will profoundly transform the health of the entire society. It can provide legislators, policy makers and others involved in the decision making processes. The ingredients to make sound judgment and thoughtful planning, valuable precise and up to date vital statistics will be available to let governments and societies zero in on present health problems and thus devise appropriate courses of actions. Likewise an insight into projected health problems of the society will be additionally gained to allow futuristic health planning and priority setting strategies. Policy makers are further enabled to make better use of the existing health facilities and realistically identify, analyze and quantify existing deficiencies and to figure out workable solutions. Medical practitioners armed by a user friendly, society centered, locally relevant database will be able to deliver better customized care. It is the medical research where by any false sense of health care security based on impressionable and untested assumptions or inflated assumptions could be debunked and eliminated. Otherwise they would readily derail governments and public alike. Now with this bird's eye view, it should be incontrovertible to conclude that medical research is a worthwhile, smart national investment. To ensure these endeavors to autonomously continue and accelerate, policy makers in the developed countries should fully understand that things never get better by being left alone, nor ignoring problems will make them disappear. The daily street violence is limited to a few areas, so we can start in the relatively stable cities to jump on the fears from lack of security. I think that the crisis though, is an opportunity for the pioneers and far sighted people.

# Comparative study of local infiltration of bupivacaine and parenteral administration of diclofenac sodium for post tonsillectomy pain in adults

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## ABSTRACT

**Objective:** to compare the efficacy of pre-operative local infiltration of local anesthetic (bupivacaine) with the conventional parenteral administration of an NSAID, diclofenac sodium on postoperative pain in adults undergoing tonsillectomy using a standardized anesthetic technique.

**Patients and Methods:** 120 patients of either sex, age 20 to 40 years posted for tonsillectomy were enrolled and randomly assigned into 2 groups:

Group A: Received diclofenac sodium 1.5 mg/kg intramuscular, 30 min. before surgery (60 patients).

Group B: Received bilateral pre-incisional infiltration of 3 ml of 0.25% bupivacaine in the peritonsillar fossa (60 patients).

**Results:** Pain intensity after surgery was assessed by asking patients to express their pain on visual analogue scale 0- 100 mm scale (0 mm: no pain; 100 mm : maximum imaginable pain) and estimated at 1 hour, 3 hours, 6 hours, 12 hours and 24 hours after surgery.

There was no statistically significant difference between group A and B at all time intervals ( $p < 0.01$ ).

**Conclusion:** Preincisional infiltration of local anesthetic (bupivacaine) and pre-operative parenteral administration of an NSAID, diclofenac sodium were found to be equally effective methods for treating post tonsillectomy pain.

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## INTRODUCTION

Tonsillectomy is one of the most frequently performed ambulatory surgical procedures.<sup>1</sup> The introduction of an electrodissection surgical technique has virtually eliminated immediate postoperative hemorrhage. However, it may cause more pain, discomfort and poor oral intake due to more local inflammation, nerve irritation and laryngeal muscle spasm.<sup>2</sup> Pain is still the most significant obstacle to the rehabilitation of a patient following tonsillectomy.

Post tonsillectomy pain has a maximum intensity immediately after operation and in the first three post opera-

tive days.<sup>3</sup> Thus there is a need to achieve adequate pain control. Various strategies for the management of post tonsillectomy pain have been proposed like infiltration of local anaesthetic,<sup>4,5</sup> non-steroidal anti-inflammatory drugs (NSAID)<sup>6</sup>, narcotics and oral analgesics<sup>7</sup>. Application of sucralfate as a protective barrier following tonsillectomy has been found to promote healing with significant pain reduction in the post-operative period.<sup>8</sup> The aim of this study was to compare the efficacy of pre-operative local infiltration of local anesthetic (bupivacaine) with the conventional parenteral administration of an NSAID, diclofenac sodium, on postoperative pain in adults undergoing tonsillectomy using a standardized

anesthetic technique.

## MATERIALS AND METHODS

This study was conducted in the Department of Otorhinolaryngology, royal medical services, Jordan, in the period from June 2003 to July 2005.

After an informed written individual consent was taken, 120 patients of either sex, age 20 to 40 years posted for tonsillectomy were enrolled the indication being chronic tonsillitis, recurrent episodes of acute tonsillitis.

Cases of peritonsillitis, peritonsillar abscess, neoplastic lesions, patients with a known allergy to the drugs being used, asthma, kidney, or hepatic dysfunction or hemorrhagic diathesis were excluded.

Patients were randomly assigned to each group using a list of random numbers, and received either of the two treatment modalities.

Group A: Received diclofenac sodium 1.5 mg/kg intramuscular, 30 min. before surgery (60 patients).

Group B: Received bilateral pre-incisional infiltration of 3 ml of 0.25% bupivacaine in the peritonsillar fossa (60 patients).

All the tonsillectomies were performed using a standardized anesthetic technique. One surgeon employed the blunt dissection technique (Boyle-Davies). The bleeding was controlled by bipolar diathermy or ligation.

Pain was estimated in all patients by an independent observer. Visual analogue score (VAS) was assessed on a 0- 100 mm scale ( 0 mm: no pain; 100 mm : maximum imaginable pain) and estimated at 1 hour, 3 hours, 6 hours, 12 hours and 24 hours after surgery.

## CONCLUSION

Our results showed that Preoperative diclofenac in group A and preincisional infiltration in group B were found to be equally effective methods for treating post tonsillectomy pain.

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# Progressive Sensorineural Hearing Loss and Its Relationship with Normal Tension Glaucoma

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## ABSTRACT

**Objectives:** The aim of this study was to evaluate the association between progressive sensorineural hearing loss and normal tension glaucoma.

**Materials and methods:** This prospective study was conducted in South Shouna Hospital (Ministry of Health-Jordan) during the period between 2003 - 2005. 26 patients attending an ophthalmology clinic and diagnosed to have normal tension glaucoma were referred to the ENT clinic. Ophthalmologic examination included Snellen's visual acuity testing, anterior segment examination via slit lamp, and posterior segment examination after mydriasis via indirect ophthalmoscope, Goldmann's applanation tonometry to measure intraocular pressure, and visual field assessment via Goldmann's perimeter. In the ENT clinic, audiograms, stapedial thresholds and otoacoustic emissions were obtained. Serological testing of antiphospholipids antibodies were done for all patients. The results were compared with two control groups: one had other types of glaucoma, and the other was normal people.

**Results:** 18 normal tension glaucoma patients (75%) had sensorineural hearing loss. Elevated antiphospholipid antibody concentrations were more frequent in patients with normal tension glaucoma and hearing loss compared with normal tension glaucoma patients with normacusis. There was no association between primary open angle glaucoma, hearing loss and antiphospholipid antibody. Pseudoexfoliation was associated with hearing loss but not with antiphospholipid antibodies.

**Conclusions:** The association between hearing loss, normal tension glaucoma and antiphospholipid antibody indicates that they are part of autoimmune systemic process.

**Keywords:** Progressive sensorineural hearing loss, normal tension glaucoma, antiphospholipid antibodies, and autoimmune diseases.

## INTRODUCTION

In recent years, the understanding of development and progression of glaucomatous optic nerve damage has changed. There is accumulating evidence for a multifactorial pathogenesis of glaucomatous optic neuropathy. Besides an elevated intraocular pressure, there is special emphasis on cardiovascular and haematological risk factors and also on genetic and immunological aspects<sup>1-3</sup>. Recently, Kremmer *et al*<sup>4</sup> found elevated levels of a subgroup of antiphospholipid antibodies in patients with normal tension glaucoma (NTG) compared to patients with primary open angle glaucoma (POAG) and age

matched healthy controls. These findings may be interpreted as a sign for a generalised disease.

Although the pathogenesis of progressive sensorineural hearing loss (PSHL) often remains unclear some research activities have focused on the role of autoantibodies against antigens in the inner ear. This concept was introduced by Reinhardt<sup>5</sup> and is supported by the fact that hearing loss is associated with different autoimmune diseases such as Cogan syndrome, rheumatoid arthritis, Sjögren syndrome, and Behçet's disease<sup>6-8</sup>.

Hisashi *et al*<sup>9</sup> were the first to demonstrate an association between progressive sensorineural hearing loss in

patients with lupus erythematosus and antiphospholipid antibodies. They proposed that in patients with lupus erythematosus these antibodies are causative for thrombosis of the labyrinth leading to progressive sensorineural hearing loss.

Phospholipids are constituents of all membranes and are divided in many subspecies such as phosphatidylserine (APSA). It has been theorised that APSA can be generated by any pathological conditions shifting phosphatidylserine from the inner membrane leaflets to the external membrane leaflets of cells<sup>10</sup>. This shift is the beginning of the apoptotic mechanism and leads to cell destruction and ischemia in endothelial cells<sup>11</sup>. This permits a number of phospholipid binding proteins to be presented to the immune system in unique antigenic conformations, giving rise to antibody production. The aim of this study was to investigate a possible coincidence between NTG, PSHL and the association to APSA.

## MATERIALS AND METHODS

This prospective study was conducted in South Shouna Hospital during the period between 2003 - 2005. 26 patients attending ophthalmology clinic and diagnosed as normal tension glaucoma (typical optic disc and visual field damage and intraocular pressure below 21 mmHg) were referred to the ENT clinic. Ophthalmologic examination included Snellen's visual acuity testing, anterior segment examination via slit lamp, and posterior segment examination after mydriasis via indirect ophthalmoscope, Goldmann's applanation tonometry to measure intraocular pressure, and visual field assessment via Goldmann's perimeter. In ENT clinic, audiograms, stapedia thresholds and otoacoustic emissions were obtained.

Hearing loss was compared to previously established hearing thresholds in patients with normal hearing and presbycusis. Presbycusis was defined as hearing loss of high frequencies in elderly people whereas PSHL was age independent. Serological testing of antiphospholipids antibodies were done for all patients. APSA level of >15 U/ml was considered elevated.

## RESULTS

The mean age of patients with NTG was 64.8 years; 15 females and 9 males (**Table 1**).<sup>18</sup> normal tension glaucoma patients (75%) had sensorineural hearing loss: 10 (41.7%) were pathological and 8 (33.3%) had presbya-

cusis (**Table 2**). Elevated antiphospholipids antibodies concentrations were more frequent in patients with normal tension glaucoma and hearing loss compared with normal tension glaucoma patients with normacusis (**Table 3**) or other types of glaucoma. Among the other types of glaucoma, primary open angle glaucoma was seen in 10 patients and pseudoexfoliation glaucoma in 8 patients.

## DISCUSSION

In the past few years it was shown that autoimmune phenomena are associated with hearing loss. Naredrop *et al*<sup>12</sup> found a correlation between sudden hearing loss and systemic lupus erythematosus. Moreover, progressive hearing loss may be associated with increased autoantibody levels: Tomato *et al*<sup>7</sup> were able to demonstrate an increased concentration of IgG anticardiolipin antibodies in 30% of patients with Sjögren's syndrome and sensorineural hearing loss.

In principle, two different entities of autoantibodies were found to be associated with glaucoma: autoantibodies against specific proteins of the retina and the optic nerve<sup>13-14</sup> or against more common antigens<sup>15-16</sup> such as extractable nuclear antigens, small heat shock proteins and serum antibodies against neuron specific enolase.

Interestingly, Shokoohi *et al*<sup>17</sup> reported on elevated antiphospholipid antibodies in NTG and POAG patients. APSA are a subgroup of antiphospholipid antibodies which are one of the hallmarks of the antiphospholipid syndrome. APSA may be important because of their binding specificity to phosphatidylserine molecules which become accessible during apoptosis, which in turn may lead to local thrombosis.

Interestingly, a higher prevalence of antiphosphatidylserine antibodies was seen in NTG patients with hearing loss in comparison to NTG patients with normacusis. This finding suggests a similar pathological pathway as a sign for generalised disease. The increase of the same antibody entity in patients suffering from both, NTG and PSHL may indicate an association with similar systemic autoimmune processes.

Patients with presbycusis or PSHL showed a small difference compared to patients with normacusis, suggesting that some patients with presbycusis also have elevated antiphosphatidylserine antibodies. This is not surprising because antiphospholipid antibodies increase with age. The smaller occurrence of hearing loss com-



pared to normal tension glaucoma might be explained by the fact that the terminal vessel pathway in the eye seems to be more vulnerable to blood supply disturbances or patients are more sensitive to the sense of vision than to hearing. It has been shown that apoptosis can be induced by antiphosphatidylserine antibodies, which results in occlusion of small vessels by thromboemboli and finally leads to disturbance of the microcirculation in the inner ear and eye.

Pseudoexfoliative glaucoma was associated with PSHL but with almost similar APSA level with normal people

of same age group. This may be explained by the fact that Pseudoexfoliation is considered as a systemic disease affecting many organs in the body<sup>18</sup>.

The association between hearing loss, normal tension glaucoma and antiphospholipid antibody indicates that they are part of autoimmune systemic process. Based on these findings all patients with NTG or significant hearing loss and elevated levels of antibodies against phosphatidylserine should have further ophthalmological or otological work up.

**Table 1.** Patient distribution according to age and sex

Category	Mean age (years)	Males	Females
NTG	64.8	9	15
Other glaucoma	67.3	13	11
Normal	66.5	12	12
Total	66.2	44	38

**Table 2.** Progressive sensorineural hearing loss in different types of glaucoma

Category	Pathological PSHL	Category Presbycusis
NTG	10 (41.7%)	8 (33.7%)
POAG	3 (12.5%)	8 (33.7%)
Pseudoexfoliation	8 (33.7%)	7 (29.2%)
Normal	2 (8.3%)	9 (37.5%)

**Table 3.** Antiphospholipid antibodies in different types of glaucoma in patients with PSHL and in normacusis

Category	Mean APSA (U/ml) in PSHL	Mean APSA in presbycusis	Mean APSA in normacusis
NTG	32.4	27.3	22.1
POAG	16.9	13.2	9.8
Pseudoexfoliation	15.4	15.3	11.3
Normal	14.8	14.4	10.2

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# Ten minute consultation: Otolgia

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## Case scenario

A 40 year old male patient presents to you with persistent otalgia. Lately he has been suffering from odynophagia (painful swallowing). He is a lifelong smoker and drinks heavily.

## What issues to cover?

- Otolgia is a common presentation in general practice. It has many origins and distinguishing otological from referred pain causes can be done based on an accurate history and examination. Otolgia may also sometimes be the only symptom of underlying malignancy and therefore should not be taken lightly.
- Onset and duration of otalgia
- Associated otological symptoms e.g. hearing loss, tinnitus and vertigo. Unilateral, conductive type of hearing loss (from glue ear) in an adult may be the sign of nasopharyngeal carcinoma.
- History of progressive dysphagia, odynophagia, food sticking in the throat and/or hoarseness and weight loss suggests laryngopharyngeal lesion e.g. tumours
- Fevers or rigors, rapid onset and progression may be a sign of an infective process e.g. tonsillitis, peritonsillar abscess or supraglottitis.
- Smoking and alcohol history has a strong associated with head and neck cancers
- Referred pain can originate from dental disease (Vth cranial nerve), temporomandibular joint dysfunction and cervical spondylosis (C2,C3 nerve)

## What should you do?

### Examination

### Examine the ear

- Pinna- look for perichondritis, vesicles (Herpes zoster)
- External auditory canal- wax, debris/pus canal (otitis externa, otitis media),
- Tympanic membrane-red bulging drum (acute otitis media), perforation (underlying cholesteatoma, chronic otitis media), unilateral glue ear (nasopharyngeal carcinoma)
- Postauricular swelling/tenderness (Mastoiditis)

### Head and neck examination

- Oral cavity, tonsils, tongue and nose should all be examined for infection or suspicious malignant lesion
- Any neck swelling should raise the suspicion of malignancy. Of the head and neck neoplasms that present as an isolated neck mass, 40% are due to metastatic squamous carcinoma and 40% are lymphomas.
- One should also examine the dental status, temporomandibular joint (TMJ) tenderness/clicking and cervical tenderness and range of movement (spondylosis)

### Treatment (see table)

- Any suspicion of malignancy (history of smoking and alcohol in a middle-aged person, persistent hoarseness-duration>3 weeks, dysphagia) should be referred to an ENT surgeon for fiberoptic endoscopic examination.
- Features suggestive airway compromise or in adequate oral intake may suggest supraglottitis or tumour, also need immediate referral.
- Sudden hearing loss, facial paralysis, features or

mastoiditis or suspicion of malignant otitis externa should be referred to ENT immediately.

- Acyclovir should be started early in Ramsay Hunt syndrome to prevent progression
- Dental or TMJ dysfunction should be referred to the dentist and maxillofacial surgeons respectively.

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