

## From the editor

Dear Readers...

In this issue of the Journal you will find three original articles, one review, and one letter to the editor. For the first time, this issue of the TJPH includes both English and Turkish studies. One article in this issue is in Turkish, and the other four studies are in English.

The first article is about reasons for vasectomy reported by Qazi H. and et al. from Pakistan. In this study, the authors conclude that financial compensation provided by the government is the major factor for vasectomies in clients.

The second original article is from Gaza on Palestine which is about knowledge, attitude, practice and self reported symptoms of gasoline station workers in relation to the risks of exposure to the gasoline. In this study Yassin and Baroud report that there is a significant increase in the prevalence of self reported symptoms with increasing years of work in the station.

The other original article is on microbiological analyses of drinking water in Mersin. The data in this study were based on the records from 2004. Kurt et al. report that more than 10.0% of samples were not clear, and water samples were not taken periodically [or 'at regular intervals' throughout the year.

The review in this issue is on peace, health, and human rights submitted Banoob. This study shows estimated deaths in selected armed conflicts, and describes major impacts of the conflicts on health in the post-conflict era.

The last study in this issue is on regulation of commercialized healthcare systems. In this study, the negative effects of commercialization of health care sectors were discussed.

Dear authors and readers...

We have new targets related to TJPH. As you know we are publishing our issue with some delays. Our first target is to publish the

issues on time starting from the beginning of 2010. Our second target is to reduce the time of the reviewing process. Thirdly, we want to join the scientific indexes. All of the targets can be achieved with your support and corporations. We are waiting for you to submit articles to the TJPH, and support our journal.

We hope you enjoy this issue of the Turkish Journal of Public Health and we would like to thank all the authors and reviewers.  
24.12.2009

Best Regards...  
Tacettin Inandi  
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***English edition***

Prof R W Guillery

## Reasons for vasectomy in clients presenting to tertiary care government centers

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### Abstract

**Objective:** To determine the main reasons for vasectomies in clients presenting to tertiary care government reproductive health centers. **Study design:** Descriptive. Place and duration of study: Jinnah Post Medical Graduate Reproductive Health Services Center (RHS), population Welfare Department, government of Sindh, Karachi from January 2007 to November 2008. **Methodology:** The study includes 208 clients undergoing vasectomy selected through consecutive sampling. The inclusion criteria were all clients of any age undergoing vasectomy, who were married and had three or more children. All clients who were unmarried, or had fewer than three children, or provided incomplete information were excluded. The main variables of the study were the educational level, occupation, duration of marriage, and reasons for vasectomy. **Results:** The mean age of the clients was 37.72 ( $\pm 5.10$ ) years. The mean duration of marriage was 14.99 ( $\pm 4.60$ ) years. About 90 (43.3%) clients were illiterate, 18 (8.7%) primary grade school pass, 60 (28.8%) middle grade school pass, 26 (12.5%) matric (high school) pass, 10 (4.8%) inter (college) pass and 4 (1.9%) were (university) graduates. About 124 (59.6%) clients were laborers. The main reason for the vasectomies was compensation in 124 (59.6%) clients followed by poverty 80 (38.5%) and failure of other means of contraception 4 (1.9%). **Conclusion:** Financial compensation provided by the government is the major factor for vasectomies in clients. This government strategy seems not to be cost effective in long term. Furthermore it rises the question of how ethical is it to influence patients to have vasectomies for compensation rather than focusing their mind towards vasectomy as means of contraception and family planning.

**Key words:** Vasectomies, Compensation, poverty and education

### Introduction

The growth rate in Pakistan varied between 2.45%-3.66% from 1951-1998. However recently, the growth rate has declined to 1.9% in 2004 and 1.80% in 2008.<sup>1,2</sup> The target was set after alarming

projections made by WHO which projected a population of about 249.7 million in 2025 with total fertility rate of 4.8%.<sup>3</sup>

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One of the main methods of family planning involves use of contraceptives. The permanent methods of contraception include contraceptive surgery, which consist of tubal ligation for women; and vasectomy for men.<sup>4</sup> Vasectomy provides permanent contraception for men who decide that they do not want any more children.<sup>4</sup> It is a safe, effective, permanent, simple and quick surgical procedure.<sup>5-10</sup> It can be done under local anesthesia in outpatient settings, and men can usually go home within an hour after surgery.<sup>4,11</sup> It also has no effect on sexual ability. Vasectomy is a common office procedure and is the most inexpensive option for permanent sterilization.<sup>10</sup> It is even less expensive and safer than tubal ligation.<sup>10</sup>

Vasectomy is a straightforward and minor surgical procedure which suits a direct access service.<sup>11</sup> Minor complications, however, are not uncommon.<sup>12</sup> The realistic preoperative counseling about possible complications such as hemorrhage (5%), wound infection (5%), and hematoma (14%) chronic scrotalgia (5%) and the risk of recanalisation (0.28-0.5%) is of utmost importance.<sup>13</sup> Vasectomy does not increase the risk of heart disease, and available evidence argues against an increase in the risk of prostate cancer, testicular cancer, or overall mortality. Whether a post vasectomy pain syndrome exists remains controversial.<sup>12</sup>

Almost 100 million men worldwide have relied on vasectomy for family planning.<sup>8</sup> Vasectomy is generally safe but it can fail in up to 6% of cases. Although its reversal is possible it is not always successful. Most men are azoospermic within six weeks of vasectomy.<sup>9</sup> Worldwide, sterilization

(tubal sterilization and vasectomy) is more common than any other method of contraception.<sup>12</sup> Approximately 35,000 vasectomies were performed in the Netherlands alone in 2004. It is common in men who are non-Hispanic whites, well educated, married or cohabitating, relatively affluent, and have private health insurance.<sup>13,14</sup> Vasectomy is also popular in some provinces in China.<sup>15</sup> But it is still not available in many developing countries.<sup>7</sup>

The overall, the prevalence of vasectomy in New Zealand men aged 40-74 years is about 44% (95% CI, 37-52%).<sup>16</sup> It is about 57% for men between 40-49 years and 15% for 70-74 years.<sup>16</sup> Catholic men had significantly lower odds of having had vasectomy and the odds increase with increasing number of marriages and with the level of the wife's education.<sup>16</sup>

A study conducted in 2005 in Pakistan showed contraceptive use of about 45.6% among illiterate individuals; 61.3% for those with an education up to matric and 71.3% for those with an education above matric. Study of the socio-economic condition showed that 43.2% of the contraceptive users belonged to families earning less than Rs.3000 ; and 68.6% had an income level of above Rs.6000+. These findings also show that contraceptive use was 82.8% amongst working women was but 54.3% in housewives.<sup>17</sup>

The study by Barone showed that the commonest reasons for choosing vasectomy include that it is the surest way to prevent having more children (49.9 %), having a partner who dislikes other forms of contraception (12.3 %) and the patient himself disliking other forms of contraception (10.0 %).<sup>17</sup>

There is paucity of local data and after a robust systematic literature review only one study was found that related to our objective and this was conducted in Sir Ganga Ram Hospital of Lahore in 2006.<sup>19</sup> This study concluded that many factors remain to be explored and that there is still need to do larger studies. Although our study was not a critical appraisal of the first study, neither are we trying to determine weaknesses of the study. Rather we compliment the previous study as one of its first kind to be conducted in Pakistan. However, our

### Methodology

A descriptive study of 208 clients selected consecutively between January 2007 and November 2008 was conducted in the JPMC Reproductive Health “A” Services Center (RHS) Population Welfare Department Govt of Sindh, providing a vasectomy service in Karachi. During this period around 280 clients visited the center with a vasectomy request.

The inclusion criteria were all clients of any age undergoing vasectomy, who were married and had three or more children. All clients who were unmarried or had fewer than three children, were excluded. We also excluded those clients with incomplete information or missing information about the required variables in our study. The selection criteria were based on a government policy for vasectomy which permitted these centers to enroll only patients who are married and have three or more children.

The main variables of the study were the reasons for the vasectomies. These included poverty and financial compensation. Poverty included

experiences have shown that one of the main reasons for preferring vasectomy is the financial reward, which was not specifically defined and focused on in the previous study. This was the main motive of our study and provides a very strong rationale. So that many NGOs and government agencies can look and review their programs and policies. The objective of our study was to determine the factors associated with vasectomy in clients visiting the reproductive health center of a tertiary care facility.

“inability to afford any more children due to financial constraints”. Financial compensation included “funding received from the government by vasectomy clients”. Other variables were socio-demographic and included age, level of education, duration of marriage, number of children and occupation.

We have controlled information bias by limiting our study to only the last two years and by cross checking and verifying records by independent observers not part of study. Two independent observers both medical doctors were provided the medical records of the vasectomy clients. These two researchers recorded the required information in the questionnaires.

The data was analyzed using the Statistical Package for Social Sciences (SPSS) version 13. Descriptive statistics of socio-demographic and other variables of the sampled population were computed. Means and standard deviations (SD) were calculated for continuous variables such as age and duration of marriage. Categorical

variables were the level of education of the clients, their occupation, the number of children (including boys and girls)

and reasons for vasectomy (Financial compensation and poverty)

## Results

The mean age of the clients was 37.72 ( $\pm 5.10$ ) years. The minimum and maximum values were 28 and 55-respectively. The mean duration of marriage was 14.99 ( $\pm 4.60$ ) years, the minimum duration was 4 years and maximum was 28 years see Table 1 The level of education categorized 90 (43.3%) as illiterate, 18 (8.7%) primary school pass, 60 (28.8%) a middle school pass, 26(12.5%) a matric (higher school) pass, 10 (4.8%) an inter pass (college) and 4 (1.9%) as university graduates.

The occupations included 124 (59.6%) who were laborers and the others were

involved in a variety of different occupations. Sixty six (31.7%) clients had three children, 50 (24%) had four children, 44 (21.2%) had five children, 28 (13.5%) had six children, 14 (6.7%) have seven children, 4 (1.9%) had eight children and only 2 (1%) clients had nine children. The reasons for vasectomy include compensation for 124 (59.6%) clients, poverty for 80 (38.5%) and for 4 (1.9%) it was failure of other means of contraception. The reasons for the vasectomy were further stratified according to age, education, occupation, duration of marriage and number of children see Table 1.

**Table 1. Stated reasons for the vasectomy according to the characteristics of the clients**

Variable	Compensation		Poverty		Others		Total	
	n	%	n	%	n	%	n	%
Age of client								
20-30 years	4	22.2	14	77.8	-	-	18	8.6
31-35 years	42	75	14	25	-	-	56	26.9
36-40 years	60	66.7	28	31.1	2	2.2	90	43.3
>40 years	18	40.9	24	54.5	2	4.5	44	21.1
Total	124	59.6	80	38.5	4	1.9	208	100
Education								
Illiterate	58	64.4	32	35.6	-	-	90	43.2
Primary	14	77.8	4	22.2	-	-	18	8.6
Middle	36	59	25	41	-	-	61	29.3
Matric	9	36	16	64	-	-	25	12.0
Inter	7	70	3	30	-	-	10	4.8
University graduate	-	-	-	-	4	100	4	1.9
Total	124	59.6	80	38.5	4	1.9	208	100
Occupation								
Laborers	124	100	-	-	-	-	124	59.6
Others	-	-	80	95.2	4	4.8	84	40.4
Total	124	59.6	80	38.5	4	1.9	208	100
# of children								
≤3	48	72.7	18	27.3	-	-	66	31.7
4-5	44	46.8	48	51.1	2	2.1	94	45.2
>5	32	66.7	14	29.2	2	4.2	48	23.1
Total	124	59.6	80	38.5	4	1.9	208	100
Year of marriage								
≤10 years	22	73.3	8	26.7	-	-	30	14.4
11-15 years	54	62.8	32	37.2	-	-	86	41.3
16-20 years	44	27.9	28	36.8	4	5.3	76	36.
≥ 20 years	4	25	12	75	-	-	16	7.7
Total	124	59.6	80	38.5	4	1.9	208	100

## Discussion

The results show that clients coming for vasectomy have different educational backgrounds ranging from illiterate to post graduate, are involved in different occupations, with an

average duration of marriage of  $14.99 \pm 4.60$  years. The main reason for vasectomy was compensation in 124 (59.6%) clients.

An earlier study by Sinha showed that the majority of the clients who opted for vasectomies were illiterates, as did our study in which 43% were un-educated. Sinha's study also showed that the importance of family planning is largely dependent on their propensity for people to better their economic conditions.<sup>20</sup> Our study also showed that around 80 (38.5%) clients opted for vasectomy on the basis of financial reasons (poverty).

Another study conducted in Nepal on 427 clients showed that the major occupation of the clients was agriculture (73.7%) with a literacy rate of 83.0%, while our study showed that around 124 (59.6%) were laborers and 118 (56.7) were educated. In their study group mean age of vasectomy clients was 32.5 years while it was 37.72±5.10 years in our study.<sup>21</sup>

A nationwide, practice-based survey of 719 men receiving vasectomies in the US showed that people of a high social class who were well educated made up 81% of vasectomy recipients.<sup>18</sup> This is in contrast to our findings which showed exactly the opposite of the above; there were more illiterate and low socio-economic status people in our sample.

A study conducted in Lahore (Pakistan) in 2006 showed the mean age of the clients was 36.13(±6.4) years, the average duration of marriage was 13.27 years and the average number of children was 3.91 (±1.42). About 93(62%) of the clients were illiterate while only 6 (4%) had passed the secondary school examination, 106 (67%) were laborers and unskilled workers. About one third of that sample (63%) opted for vasectomy for

financial reasons.<sup>19</sup> Our study conducted in similar settings showed similar findings with the mean age as 37.72 (±5.10) years, the mean duration of marriage as 14.99 (±4.60) years and with 60% being laborers. However, in our study the major contrast was that about 43.3% of the clients were illiterate and about 124 (59.6%) of the clients opted for vasectomy for financial compensation, a significant finding not reported in the previous study.

As a retrospective study there was a chance that many of the valuable data and findings were difficult to retrieve or even missing. However we tried to minimize bias by cross checking and verification of records by two authors independently. In a prospective study it would be difficult to get true information regarding financial compensation or rewards. As people most probably would not have mentioned this aspect during interview with us who are the researchers even when it would be the major reason. Therefore we selected a retrospective study in which these clients would have really told the truth to those family reproductive center staff, because of their rapport. As the reasons for vasectomy, financial compensation, poverty and failure of other means of contraception were interrelated

One of the main factors for vasectomy could be that clients would be interested in multiple sex partners before marriage but because in government setting vasectomy services are being provided only to married clients as per government policy, therefore we were not able to assess this reason in unmarried clients.

## Conclusion

Financial compensation of 500 PKR = 6.25 USD [1USD = 80 PKR] by the government was the commonest reason for vasectomy in our clients, followed by poverty and failure of other means of contraception. A few ethical concerns arise when clients decide to be vasectomized for the compensation and not as a method of family planning and a contraceptive method. This clearly shows a need to review the policies and the program, especially where the financial compensation is provided to the vasectomy clients by the government. As the objective of this compensation was to boost the program of family planning and not to alleviate poverty.

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## Knowledge, attitude, practice and self reported symptoms among gasoline station workers exposed to leaded gasoline in the Gaza Strip

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### Abstract

**Objective:** This study assessed knowledge, attitude, practice, and self reported symptoms associated with leaded gasoline exposure among 200 gasoline station workers (mean age  $30.7 \pm 9.4$  years) in the Gaza Strip. **Method:** A cross section of workers was asked to fill in a questionnaire. A low level (7.5%) of illiteracy was recorded. **Results:** One hundred and fifty workers (75%) reported a relatively high level of knowledge on the health impact of leaded gasoline (75%). A higher proportion of workers (147) were aware of inhalation of leaded gasoline as a route of exposure than skin 36 (18.0%) or mouth 6 (3.0%). Knowledge concerning accumulation of lead in the body was low 52 (26.0%). The higher the education level, the more knowledge the workers had, particularly knowledge about the health effects of leaded gasoline ( $X^2=27.01$ ,  $P=0.001$ ). Protective measures were poorly used. Workers who did not use protective gear had more knowledge about the health effects of leaded gasoline, the route of lead entry and its accumulation in the body than those who did. This means that knowledge does not influence practice. Common self reported symptoms among leaded gasoline exposed workers were headache 65 (32.5%), nausea 55 (27.5%), and pallor 46 (23.0%). There was a significant increase in the prevalence of self reported symptoms with increasing years of work in the station ( $P=0.001$ ). **Conclusion:** The prevalence of symptoms was generally higher among workers who did not use the protective gear than those who did. However, the interaction between use of protective measures and self reported symptoms was significant only for hat and overall ( $X^2=4.104$ ,  $P=0.043$  and  $X^2=6.226$ ,  $P=0.013$ , respectively).

**Key Words:** Gasoline station workers, Gaza Strip, Lead exposure, Self reported symptoms, Workers awareness.

### Introduction

The unique mechanical and electrochemical properties of lead as well as its low cost make it ubiquitous in industrial society. Lead is added to gasoline to overcome the problem of "knocking" or pre-ignition in the engine<sup>1</sup>. Leaded gasoline is still

imported from Israel to the Gaza Strip<sup>2</sup>. In gasoline stations the major sources of exposure of workers to leaded gasoline are the lead fumes generated during filling cars or through exposure to fumes coming from cars, contaminated hands, food, water and clothing<sup>3,4</sup>.

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The major routes of lead entry into the human body are the respiratory and alimentary tracts and the skin. Lead absorption through the former two routes is more important in occupational exposure<sup>5</sup>. Once in the bloodstream, lead is distributed among blood and soft and hard tissues<sup>6</sup>. With chronic exposure over a long period of time, most absorbed lead accumulates in the bone which ultimately provides a source of remobilization and continued toxicity after exposure ceases<sup>7</sup>.

Occupational lead exposure adversely affects several body systems including the nervous, hematopoietic, gastrointestinal, musculoskeletal and reproductive systems<sup>8,9,10</sup>. Symptoms may be manifested as headache, fatigue, irritability, impaired concentration, wrist/foot drop, nausea, dyspepsia, constipation, colic, lead line on gingival tissue, loss of libido or anemia<sup>11,12,13,14</sup>.

The main aim of the present study was to assess knowledge, attitude, and practice, and self reported toxicity symptoms among workers exposed to leaded gasoline in the Gaza Strip with the following specific objectives:

- (1) To assess the knowledge of gasoline station workers regarding health effects of leaded gasoline, the route of lead entry into the human body and its accumulation.
- (2) To examine workers' attitudes towards the work in the station and the effectiveness of protective gear.
- (3) To evaluate workers' practices regarding the use of protective measures and their activities with potential for exposure to lead.
- (4) To identify self reported toxicity symptoms associated with leaded gasoline exposure and their relation to work practices.

### **Study area**

The Gaza Strip is a narrow coastal zone of land bordered by Egypt to the south, the green line to the North, Negev desert to the East and the Mediterranean Sea to the West. The Gaza Strip is divided geographically into five Governorates: Northern, Gaza, Mid Zone, Khan Yunis and Rafah. The total surface area of the Gaza Strip, where about 1,443,814 Palestinian people live and work<sup>15</sup>, is 360 km<sup>2</sup>. These figures classify the Gaza Strip as one of the most densely populated area in the world. The Gaza Strip is a poor area. Its economy depends mainly on agriculture, fishing, employment in the Palestinian National Authority and small industry<sup>16</sup>. The Gaza Strip suffers from a long-term pattern of economic stagnation and plummeting development indicators. The severity of the situation has increased exponentially since Israel imposed extreme restrictions on the movement of goods and people in response to the new political situation in the Gaza Strip. Unemployment in Gaza is close to 40% and is set to rise to 50%<sup>17</sup>. The Gaza Strip suffers from many environmental problems including extensive use/misuse of pesticides, water pollution and lack of sewage and solid waste treatment<sup>18,19,20</sup>. Air pollution is another environmental burden in the Gaza Strip caused to a large extent by carbon monoxide, nitrogen oxide and lead emitted by petrol vehicles. Leaded gasoline imported from Israel<sup>21</sup> is still the predominant fuel grade in the Gaza Strip. Lead emitted from such fuel imposes serious health problems on both the general population and on gasoline station workers in the Gaza Strip.

## Subjects and methods

The investigation was a cross-sectional study. The target population was gasoline station workers in different Governorates of the Gaza Strip during the year 2007.

The number of gasoline stations registered in the Gaza Strip in the year 2007 was 82 stations (Personal communication with municipalities of Gaza Governorates, Palestinian National Authority) distributed in the five Governorates of the Gaza Strip as follows: Northern (13), Gaza (31), Mid Zone (10), Khan Yunis (18) and Rafah (10). The estimated number of workers in these stations was: Northern 21 (range 1-3 workers/station), Gaza 85 (range 2-4 workers/station), Mid Zone 20 (2 workers/station), Khan Yunis 54 (3 workers/station) and Rafah 20 (2 workers/station). Therefore, the total number of gasoline station workers in the Gaza Strip during the year 2007 (sample size) was approximately 200 workers.

A meeting interview was used for filling in the questionnaire. All interviews were conducted face to face by one investigator himself. The questionnaire was based, with some modifications, on an earlier study of adult lead poisoning<sup>22,23</sup>. Most questions were one of two types: the yes/no question, which offers a dichotomous choice; and the multiple choice question, which offers several fixed alternatives<sup>24</sup>. A pilot questionnaire was tested with 12 gasoline station workers not included in the sample from the study area, and modified as necessary.

The questionnaire included questions related to: sociodemographic characteristics, for example, age, marital

status, education, income, and insurance; knowledge of health effects of leaded gasoline, the route of lead entry into the human body and its accumulation; and attitudes regarding the work in the gasoline station and the effectiveness of protective gear.

Practice questions included: the wearing of protective clothes; eating and drinking during work; washing hands before eating; whether they drink milk or not; and whether to have a water bath or not at workplace. Questions about self-reported symptoms were also included in the questionnaire. Individuals who did not meet the criterion of being involved in gasoline station work during the year 2007 were excluded.

## Data analysis

Data were analyzed by computer using the SPSS/PC (Statistical Package for the Social Sciences Inc., Chicago, Illinois) version 11.0. Simple distribution of the study variables, the cross tabulation, and normal  $X^2$  tests were applied. Yates's continuity correction test,  $X^2_{(corrected)}$ , was used when not more than 20% of the cells had an expected frequency of less than five and when the expected numbers were small. The  $X^2$  test for trend,  $X^2_{(trend)}$  with 1 df, which is a more sensitive test that looks for an increasing (or decreasing) trend in the proportions over the columns having natural order, was used<sup>25,26</sup>. These tests were used to identify the significance of the relations, associations, and interactions among knowledge, practice towards leaded gasoline, and the prevalence of self reported symptoms. The level of significance was set at  $P < 0.05$ .

## Results

### Demographic and employment aspects of the study population

Table 1 shows that the age of the gasoline station workers (n=200) ranged between 17 and 60 years with the mean age = 30.7±9.4 years old. A total of 136 (68.0%) workers were married; only eleven (8.1%) had no children. Analysis

of the educational status of the workers showed that 45 (22.5%) had a diploma or a university degree, 102 (51.0%) had finished secondary school, 33 (16.5%) had finished preparatory school, 5 (2.5%) had passed primary school, and 15 (7.5%) were illiterate.

**Table 1. Demographic characteristics of the study population (n=200)**

Demographic characteristics	n	%
<b>Age (Year)</b>		
<25	75	37.5
25-40	90	45.0
>40	35	17.5
Mean	30.7±9.4	
(range)	17-60	
<b>Marital status</b>		
Single	64	32.0
Married	136	68.0
Have children	125	91.9
Have no children	11	8.1
<b>Education</b>		
Illiterate	15	7.5
Primary school	5	2.5
Preparatory school	33	16.5
Secondary school	102	51.0
Diploma or University	45	22.5

A description of the employment patterns of the study population (n=200) is provided in Table 2. When asked 'Why did you choose this job?' a total of 175 (87.5%) workers said that there were no alternatives. The average weekly work hours were 51.4±11.1 hr/week; 151 (75.5%) workers worked 48 hr/week or less and forty nine (24.5%) worked more than 48 hr/week (had up to 4 hr

overtime/day). The number of years as a gasoline worker ranged between 1 and 25 years; 139 (69.5%), 50 (25.0%) and 11 (5.5%) workers had been engaged in the work for <5, 5-15 and >15 years, respectively. Most workers 131(65.5%) had salaries ranging between 800 and 1000 NIS/month (~208-260\$). Eighty seven (43.5%) had no work insurance.

**Table 2. Employment aspects of the study population (n=200)**

<b>Employment aspect</b>	<b>n</b>	<b>%</b>
<b>Why did you Choose this job?</b>		
Family job	22	11.0
No alternatives	175	87.5
High salary	3	1.5
<b>Weekly work hours</b>		
≤48	151	75.5
>48*	49	24.5
Mean	51.4±11.1	
Range	18-72	
<b>Work duration (Year)</b>		
<5	139	69.5
5-15	50	25.0
>15	11	5.5
Mean	5.3±4.9	
(range)	1-25	
<b>Salary (NIS/month)</b>		
800-1000	131	65.5
1100-1500	64	32.0
>1500	5	2.5
<b>Having work insurance</b>		
Yes	113	56.5
No	87	43.5

\* Workers had up to 4 hr overtime/day, NIS: New Israeli Shekel (~0.26\$)

### **Knowledge of gasoline station workers about lead**

Table 3 shows the knowledge of the workers (n=200) regarding health effects of leaded gasoline, route of lead entry into the body, and accumulation of lead in the body. A total of 150 (75.0%) workers knew that leaded gasoline does affect human health. When questioned

about the possible routes of exposure to lead; 147 (73.5%) workers claimed that inhalation is the route of entry, followed by 36 (18.0%) who reported that skin is the route of entry, and 6 (3.0%) who claimed that the mouth is the route of entry of lead into the body. Only 52 (26.0%) knew that lead accumulates in human body.

**Table 3. Knowledge of gasoline station workers (n=200) regarding health effects of leaded gasoline, route of lead entry and its accumulation in body**

Knowledge about	n	%
<b>Health effects of leaded gasoline</b>	150	75.0
<b>Route of lead entry into body</b>		
Inhalation	147	73.5
Skin	36	18.0
Mouth	6	3.0
<b>Accumulation of lead in the body</b>	52	26.0

The education of the gasoline station workers related to their knowledge about health effects of leaded gasoline showed that the higher the

level of education, the more knowledge they had (Table 4) ( $\chi^2=27.01$ ,  $p=0.001$ ).

**Table 4. Frequency and percentage of gasoline station workers' education in relation to their knowledge**

Knowledge about	Education					p *
	Illiterate (n=15)	Primary school (n=5)	Preparatory school (n=33)	Secondary school (n=102)	Diploma or University (n=45)	
Health effects of leaded gasoline	5 (33.3)	2 (40.0)	20 (60.6)	84 (82.4)	39 (86.7)	0.001
<b>Route of lead entry into body</b>						
Inhalation	7 (46.7)	3 (60.0)	24 (72.7)	76 (74.5)	37 (82.2)	0.098
Skin	0 (0.0)	1 (20.0)	3 (9.1)	23 (22.5)	9 (20.0)	0.157
Mouth	1 (6.7)	0 (0.0)	2 (6.1)	2 (2.0)	1 (2.2)	0.666
Accumulation of lead in body	1 (6.7)	1 (20.0)	7 (21.2)	26 (25.5)	17 (37.8)	0.155

\*  $\chi^2$  (corrected) test.

Table 5 relates the use of protective gear among gasoline station workers (n=200) to their knowledge. Workers who did not use protective gear had more knowledge about health effects of leaded gasoline, route of lead entry and its accumulation in the body than those who did. This means that

knowledge does not influence practice. However, the interaction between use of protective gear and knowledge of workers towards health effects of leaded gasoline, route of lead entry and its accumulation in the body was not significant ( $p>0.05$ ).

**Table 5. Use of protective gear among gasoline station workers (n=200) in relation to their knowledge**

Knowledge about	Using Protective gear		Not using Protective gear		p value*
	(n=35) n	%	(n=165) n	%	
Health effect of leaded gasoline (n=150)	26	17.3	124	82.7	0.914
Route of lead entry into body					
Inhalation (n=147)	23	15.6	124	84.4	0.251
Skin (n=36)	5	13.9	31	86.1	0.529
Mouth (n=6)	1	16.7	5	83.3	0.957
Accumulation of lead in body (n=52)	5	9.6	47	90.4	0.082

\* p value of  $X^2$  (corrected) test.

#### **Attitudes of workers towards work in the station and the protective gear**

A total of 57 (28.5%) workers (n=200) were against work in the station. They justified that by searching for suitable alternatives, and citing health hazards, low salary, hardness of work and their lack of interest. A total of 150 (75.0%) workers (n=200) believed that use of protective gear is effective in preventing lead exposure, whereas 50 (25.0%) had the opposite opinion.

#### **Practices of gasoline station workers towards protective measures**

Table 6 lists the different protective measures regularly used by gasoline

station workers (n=200) during work at a station. The highest number (n=26, 13.0%) wore overalls and the lowest number (n=2, 1.0%) wore goggles. Workers who did not use such protective items (n=165) claimed that they are not necessary 62 (37.6%), not provided 61 (37.0%), carelessness 23 (13.9%), and discomfort 19 (11.5%). The number of workers who mentioned not eating and not drinking during work was only 6 (3.0%). A total of 185 (92.5%) washed their hands before eating and 51 (25.5%) frequently drunk milk. Moreover, 30 (15.0%) had a water bath directly after work at the work place.

**Table 6. Gasoline station workers (n=200) who reported using protective measures during work at the station**

Protective measures in use	n	%
Wear gloves	14	7.0
Wear goggles	2	1.0
Wear hat	8	4.0
Wear oral-nasal mask	6	3.0
Wear special boots	3	1.5
Wear overall	26	13.0
Not eating and not drinking during work	6	3.0
Hand wash before eating	185	92.5
Frequently drink milk	51	25.5
Have water bath at work place	30	15.0

**Seminars and training course participation, health professional visits, safety methods, and accidents in the station**

As indicated in Table 7, sixty five gasoline station workers (32.5%) participated in seminars and training courses related to the hazards of leaded gasoline and its effect on human health. A total of 99 (49.5%) workers mentioned

that health professionals visited them in the station; of these, 28 (28.3%) and 71 (71.7%) mentioned frequent and intermittent visits, respectively. Almost all workers 199 (99.5%) admitted the presence of safety means in the station and only 5 (2.5%) workers reported that they had had accidents in the station. The nature of such accidents was car accidents and fainting.

**Table 7. Distribution of gasoline station workers (n=200) in relation to seminars and training courses participation, health professional visits, safety means and accidents in the station**

<b>Variable</b>	<b>n</b>	<b>%</b>
<b>Seminars and training courses participation</b>	65	32.5
<b>Health professional visits</b>	99	49.5
Frequent	28	28.3
Intermittent	71	71.7
<b>Safety means*</b>	199	99.5
<b>Have had an accident</b>	5	2.5

\* Safety means included fire extinguisher, water pumps, first aid and sometimes fire alarm

**Prevalence of self reported symptoms**

The prevalence of self reported symptoms among the gasoline station workers (n=200) is summarized in Table 8. A total of 87 (43.5%) had self reported symptoms related to leaded gasoline exposure, with headache being the most common (n=65, 32.5%) and

infertility the least common (n=2, 1.0%). A total of 66 (33.0%) workers had 2 or more self reported symptoms. However, one worker (0.5%) recalled one death and 5 (2.5%) workers recalled poisoning cases associated with leaded gasoline exposure.

**Table 8. Prevalence of self reported symptoms among gasoline station workers (n=200) in the Gaza strip**

Self- reported symptom	n	%
Impaired concentration	14	7.0
Headache	65	32.5
Sleep disturbance	10	5.0
Anorexia	16	8.0
Nausea	55	27.5
Constipation	13	6.5
Abdominal pain	16	8.0
Lead line in gingival tissue	20	10.0
Infertility	2	1.0
Pallor	46	23.0
Have 2 or more symptoms	66	33.0

Table 9 points out the prevalence of self reported symptoms by education and yearly work duration. The variation of the prevalence of self reported toxicity symptoms in relation to

education was not significant (P=0.163). Regarding the work duration, there was a significant increase in the prevalence of self reported symptoms with increasing years of work in the station (P=0.001).

**Table 9. Distribution of the study population (n=200) according to prevalence of self reported symptoms in relation to education and yearly work duration**

Variable	Have symptoms (n=66)*		P value**
	n	%	
<b>Education</b>			
Illiterate (n=15)	5	33.3	0.163
Primary school (n=5)	2	4.0	
Preparatory school (n=33)	17	51.5	
Secondary school (n=102)	29	28.4	
Diploma or University (n=45)	13	28.9	
<b>Work duration (Year)</b>			
<5 (n=139)	34	24.5	0.001
5-15 (n=50)	25	50.0	
>15 (n=11)	7	63.6	

\* Workers reported 2 or more symptoms, \*\* p value of  $X^2_{(corrected)}$  test

As shown in Table 10, the prevalence of self reported symptoms was higher among workers who did not use the protective gear than those who did. The interaction between the use of

protective gear and self reported symptoms was statistically significant for hat and overall ( $X^2=4.104$ ,  $p=0.043$  and  $X^2=6.226$ ,  $p=0.013$ , respectively).

**Table 10. Prevalence of self reported symptoms among gasoline station workers (n=200) in relation to protective gear in use**

Protective gear in use	Have symptoms (n=66)*		
	n	%	p value**
<b>Wear gloves</b>			
Yes (n=14)	2	14.3	0.123
No (n=186)	64	34.4	
<b>Wear goggles</b>			
Yes (n=2)	0	0.0	0.319
No (n=198)	66	33.3	
<b>Wear hat</b>			
Yes (n=8)	0	0.0	0.043
No (n=192)	66	34.4	
<b>Wear oral-nasal mask</b>			
Yes (n=6)	1	16.7	0.388
No (n=194)	65	33.5	
<b>Wear special boots</b>			
Yes (n=3)	0	0.0	0.221
No (n=197)	66	33.5	
<b>Wear overall</b>			
Yes (n=26)	3	11.5	0.013
No (n=174)	63	36.2	

\* Workers reported 2 or more symptoms

\*\* p value of  $X^2$  (corrected) test.

## Discussion

Leaded gasoline is still being imported from Israel and used in the Gaza Strip. To our knowledge no previous published work has addressed occupational aspects of exposure to leaded gasoline in the Gaza Strip. This is the first study to describe the knowledge, attitude, practice, and self reported symptoms related to leaded gasoline exposure among gasoline station workers in the Gaza Strip.

A low level of illiteracy was recorded among gasoline station workers, reflecting a well educated community. This may give the impression that the high rate of educated workers is a result of them not getting another job because of the unemployment crisis in the Gaza Strip. In addition, restriction of jobs in the Gaza Strip forced the educated population to work in gasoline stations.

Although the actual weekly work hours were determined by the Palestinian labor law to be 45 hr<sup>27</sup>, almost quarter of gasoline station workers worked more than 48 hr/week. This may be attributed to increasing life expenses, particularly after the economic siege on the Gaza Strip<sup>28</sup>, in addition to their low salaries, which have been reported here. Lack of law enforcement on station owners may be the cause of many workers having no work insurance.

Knowledge of the gasoline station workers in the Gaza Strip about the effects of leaded gasoline on human health was relatively high. The result was that a high proportion of gasoline station workers were aware that inhalation of leaded gasoline was more hazardous than other routes of exposure, and this knowledge is in accord with other studies which have found that most

occupational exposures to lead occur through inhalation<sup>5,29,30</sup>. Knowledge concerning accumulation of lead in the body was low. This necessitates the launch of educational extension program among gasoline station workers in the Gaza Strip on the fate of lead in the human body.

The interaction of workers' education with their knowledge reflects a positive influence of workers' education on their knowledge particularly on their knowledge about health effects of leaded gasoline.

The majority of workers did not use protective measures during work in the station. The reasons for not using protective gear as claimed by the workers was that it not necessary, was unavailable, carelessness and discomfort. Such practice in combination with personal habits and lack of control measures at the workplace could put workers at risk of lead exposure<sup>31</sup>. In addition, workers who did not use protective gear had more knowledge about health effects of leaded gasoline, route of lead entry and its accumulation in the body than those who did. This implies that knowledge does not have much influence on practice. Also, the positive attitude of workers towards the effectiveness of protective gear in preventing lead exposure seems not to translate into practice.

When asked 'Did health professionals visit the station?' almost half of workers agreed. However, the majority of gasoline station workers did not participate in seminars and training courses related to the hazards of leaded gasoline. This is an alarming issue to different governmental and non governmental bodies that necessitates an urgent campaign represented by introducing seminars and training

courses, and frequent health professionals' visits to the gasoline stations. Such action would alleviate lead exposure and poisoning among workers. It was reported that workers should receive training courses including instruction about the use and care of appropriate protective equipment and on the manner of wearing it<sup>32,33</sup>.

Regarding symptoms associated with leaded gasoline exposure, results showed that common self reported symptoms among gasoline station workers were headache, nausea, and pallor. These findings require urgent prevention, intervention, and protection from the Ministry of Health and other non-governmental organizations. Similar data were reported in many countries, including neighbouring ones<sup>12,34,35,36</sup>.

According to the present data there was a significant increase in the prevalence of self reported symptoms with increasing years of work in the gasoline station. This positive relationship means that increasing work duration led to increase workers exposure to leaded gasoline and put their health at a higher risk. Lead toxicity was more frequently encountered with longer term occupational lead exposure<sup>37,38,39</sup>.

In relation to protective gear, self reported symptoms were more prevalent among workers who did not use the protective gear (particularly hat and overall) than those who did. This indicates that use of protective gear can help to prevent or limit exposure to lead hazards. It has been recommended that appropriate protective work clothing and equipment including overalls, gloves, hats, shoes and mask or respirators should be provided to all workers by the employer<sup>40</sup>.

## Conclusions

Gasoline station workers in the Gaza Strip are exposed to leaded gasoline from lead fumes generated during filling cars and from the fumes of cars. Despite their knowledge about the adverse health impact of the leaded gasoline, the workers made poor use of protective measures. This implies that knowledge does not have much influence on practice. Common self reported symptoms among gasoline station workers were headache, nausea, and

pallor. There was a significant increase in the prevalence of self reported symptoms with increasing years of work in the gasoline station. In relation to protective gear, self reported symptoms were more prevalent among workers who did not use the protective gear than those who did. Prevention and intervention programs regarding the use of protective measures and monitoring the health status of gasoline station workers should be implemented.

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**Mersin İli İçme Kullanma Suyu Numunelerinin Bakteriyolojik Yönden Değerlendirilmesi\***

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**Özet**

**Amaç:** Bu araştırmada, Mersin İlinde bakteriyolojik su numunelerinin kirlilik oranlarının saptanması ve kirliliğin bölgeye, mevsime ve su kaynağının türüne göre değişiminin incelenmesi amaçlandı. **Gereç Yöntem:** Halk Sağlığı Laboratuvarının kayıtlarına dayanan tanımlayıcı tipteki bu çalışma, 2005 yılında Mersin’de yürütüldü. Veri kaynağı olarak 2004 yılında yapılan 7132 adet bakteriyolojik analiz kaydı kullanıldı. **Bulgular:** Mersin’de 2004 yılındaki su numunelerinin onda birinden fazlası içme ve kullanmaya uygun değildir. Su numuneleri yıl boyunca eşit sayıda alınmamıştır. Uygun olmayan su numuneleri köylerde ve şebeke dışı sulara daha fazla, sonbaharda en düşüktür. Uygun olmayan su numuneleri il merkezinde kışın daha fazla, ilçe ve köylerde bütün mevsim aynı orandadır. **Sonuç:** Kırsal bölgede yaşayan ve şebeke dışı su kaynaklarını kullananların su ve besinlerle bulaşan hastalıklarla karşılaşma riskleri daha fazladır. Su ile bulaşan hastalıklar açısından riskli bölgede yaşayanların bireysel su dezenfeksiyonuna önem vermesi, bu konuda eğitim almaları gerekir. **Anahtar Sözcükler:** su, analiz, mikrobiyolojik kirlenme

**Abstract**

The purpose of this study was to determine the level of microbial contamination of drinking-water and to investigate the charging of contamination with local, seasonal and kind of water’s source in Mersin. This study was conducted in Mersin in 2005 as a descriptive study according to records of Laboratory of Public Health. The results of 7132 microbial analyses of recorded in 2004 were used as data source. More than one in every ten sample of water was not drinkable and usable in 2004. Water samples was not taken periodical throughout the year. Unsuitable water samples were more in the rural areas and out of running water and less in autumn. Unsuitable water samples were more at the centre of city in winter, but they were at the same level in rural areas throughout the year. The risk of coming across with waterborne diseases was more among individuals living in rural areas and using out of running water. In order to prevent waterborne diseases, especially persons living in risky areas should attach importance to individual disinfection methods and should be educated about this subject. **Keywords:** water, analysis, microbiological contamination

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\* Bu çalışma, 28 Eylül 01 Ekim 2005 tarihleri arasında Ankara’da düzenlenen 9. Ulusal Halk Sağlığı Günleri’nde poster bildiri olarak sunulmuştur.

## Giriş

İçme ve kullanma sularının sağlıklı, temiz ve yeterli miktarda temin edilmesi insan ve toplum sağlığını doğrudan etkileyen etmenlerin başında gelir.<sup>1</sup> Sağlığa uygun, güvenli ve hijyenik İçme-kullanma suyu (İKS) sağlığın, büyüme ve gelişmenin temelidir.<sup>2</sup> Alma-Ata Bildirgesinde temel sağlık hizmetleri kapsamında temiz su sağlanması vazgeçilmez olarak öngörülmüştür.<sup>3</sup> Dünyada kırsal nüfusun yaklaşık %84'üne içme kullanma suyu sağlanamamakta, su sağlanan nüfus içindeki 2.6 milyar insanın kullandığı suyun ise sağlığa uygun olmadığı rapor edilmektedir.<sup>2</sup> Sanayi devrimi, plansız/çarpık şehirleşme ve tarımsal üretimin yoğunlaşması sonucunda su kirliliğinin boyutu çok artmıştır. Dünyada tüm ölümlerin üçte biri ve hastalıkların %80'i kirli sularla ilişkili olarak değerlendirilmektedir.<sup>3</sup>

Su kirliliği veya su kirlenmesi; kimyasal, fiziksel, bakteriyolojik, radyoaktif vb zararlı maddelerin, ölçülebilecek miktarda veya sağlığı etkileyebilecek yoğunlukta suya karışmasıdır.<sup>1,4</sup> Kaynağından çıktuktan sonra kullanılacağı ana kadar geçen sürede en çok kirlenen madde sudur.<sup>3</sup> İçme-kullanma sularında en yaygın ve sık rastlanılan kirlenme, özellikle kentlerde tehlikeli salgınlara yol açma riski taşıyan dışkı kaynaklı (*S. tifi*, *Salmonella*, *Dizanteri türleri*, *V. kolera*, *bağırsak parazitleri*, *hepatit A*, *E. polyomiyelit vb*) mikrobik kontaminasyondur. Tek kaynaklı su salgınlarında çok hızlı biçimde (patlar tarzda) binlerce kişi enfekte olabilir. Bu nedenle İKS bakteriyolojik kontrolleri yaşamsal öneme sahiptir.<sup>1,5,6</sup>

İçme-kullanma sularının mikrobiyolojik kalitesinin değerlendirilmesinde fekal mikroorganizmalar aranır. Kirliliği en iyi gösteren ölçütlerden birisi koliform bakterileridir. İKS'de *E. Coli* olması ise kirliliğin fekal kaynaklı olduğunu gösterir. Ekonomik ve teknik nedenlerle İKS bakteriyolojik analizlerinde termotoleran

koliform bakteri analizi daha uygundur.<sup>5,7</sup> İKS için mikrobiyolojik olarak 100 ml'de koliform bakteri dahil hiçbir patojen bakteri bulunmaması gerekmektedir. Eğer suda bakteri bulunursa arıtma işleminin yetersiz veya etkisiz olduğu, arıtma sonrası kontaminasyon olduğu veya su içerisinde aşırı miktarda organik madde bulunduğu düşünülür.<sup>8</sup>

Yerleşim yerlerinde sağlıklı İKS temini, suların dezenfeksiyonu ve sürekliliğinin sağlanması görevi; belediyesi olan yerlerde belediyelere, olmayan yerlerde Köy Kanunu gereğince köy ihtiyar meclislerine ve insani tüketim amaçlı suların teknik ve hijyenik şartlara uygunluğu ile suların kalite standartlarının sağlanması için denetleme ve kontrolü sağlık bakanlığına verilmiştir. Bu konuda birçok kurum ve kuruluş mevcut kanun ve yönetmelikler çerçevesinde (*Sular Hakkında Kanun; Ek.Md: 2, Umumi Hıfzıssıhha Kanunu; Md:239, Md:12, Belediye Kanunu; Md:14/a, İl Özel İdaresi Kanunu, İnsani Tüketim Amaçlı Sular Hakkında Yönetmelik*) bu işlemleri yürütürler. Su tesislerinin fiziki kontrolü, sulardan numuneler alınarak analiz için laboratuvarlara gönderilmeleri ve çıkacak sonuçlara göre kirlenme odaklarının ortadan kaldırılması gibi hizmetlerde aynı şekilde ilgili kurum ve kuruluşların işbirliğiyle yapılır.<sup>8,9</sup>

Dünyanın karşı karşıya olduğu küresel ısınma ve iklim değişikliğinin ve en ciddi etkileri su ile ilişkilidir. Atmosfer ve okyanus ısının artmasının etkisiyle yüzeysel sularda ve karalara düşen yağışta azalması sonucu içilebilir su kaynakları azalacaktır.<sup>10</sup> Araştırmamızda, küresel ısınma ile giderek daha da önem kazanan İKS konusunda, Mersin İlinde içme ve kullanma sularında rutin olarak bakılan yapılan bakteriyolojik numunelerin kirlilik oranlarını saptamak ve kirliliğin; bölgeye, mevsime ve su kaynağının türüne göre değişiminin incelenmesi amaçlandı.

## Gereç Yöntem

Kayıtlara dayalı ve tanımlayıcı tipte planlanan bu çalışma 2005 yılında Mersin’de yürütüldü. Mersin İl Sağlık Müdürlüğü Halk Sağlığı Laboratuvarında 2004 yılı İKS bakteriyolojik analiz sonuçları veri kaynağı olarak kullanıldı. Halk Sağlığı Laboratuvarı’na ulaştırılan İKS bakteriyolojik su numuneleri her ilçe ve köy için alınması gereken yasal sayı kadar, çevre sağlık teknisyenlerince ya da sağlık memurları tarafından steril cam şişelere alınmakta, alınan numuneler ilk altı saatte oda sıcaklığında, altı saatten uzun sürede ise soğuk zincirde laboratuvara getirilmekte ve çoklu tüp metodu ile analiz edilmektedir. Halk Sağlığı Laboratuvarı’na 2004 yılında,

Mersin İl Merkezi, merkeze bağlı köyler ve ilçelerinden; şebeke, kuyu, artezyen, sarnıç, kaynak, depo, sondaj, çeşme, pınar, tulumba başlıkları altında gönderilen 7132 örneğin analiz sonuçları bilgisayara girildi. İşlenen ve dezenfekte edilen sular “şebeke suyu” kuyu, çeşme, artezyen vb gibi suları ise “diğer sular” olarak gruplandırıldı. Analiz sonuçları “İnsani Tüketim Amaçlı Sular Hakkında Yönetmelik” esaslarına göre koliform bakteri sayısı 100 ml’de sıfır olanlar ‘temiz su/uygun’, diğer sonuçlar ‘kirli su/uygun değil’ olarak değerlendirildi.<sup>8</sup> Verilerin özetlenmesinde tanımlayıcı istatistikler, değişkenlerin karşılaştırmasında ki-kare önemlilik testi kullanıldı.

## Bulgular

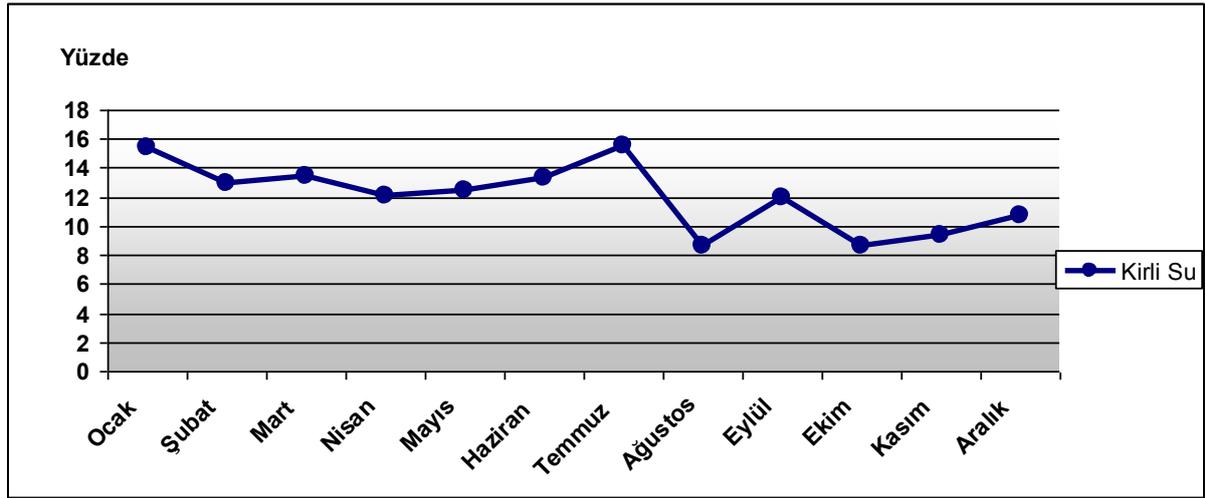
Mersin Halk Sağlığı Laboratuvarında 2004 yılı içinde yapılan İKS bakteriyolojik analiz sayısı 7132 idi. Numunelerin 4220’si (%59.2) Mersin Merkeze, 586’sı (%8.2) merkeze bağlı köylere, 2326’sı (%32.6) ilçelere aitti. Tüm numunelerin 6641’inin (%93.1) şebeke sularından ve 491’inin (%6.9) diğer su kaynaklarından alındığı belirlendi. Numunelerin; 1670’i (%23.4) ilkbahar, 1846’sı (%25.9) yaz, 2005’i (%28.1) sonbahar ve 1611’i (%22.6) kış mevsiminde laboratuvara getirilmişti. Mevsimlere göre numune alma sayısındaki farklılık istatistiksel olarak

anlamlıydı ( $\chi^2=59.62$ ,  $p<0.005$ ). Aylık ortalama  $594\pm130$  (en az=388, en çok=768) numune geldiği, en az sayıda şubat en fazla sayıda ağustos ayında numune alındığı ve aylara göre numune alma sayıları arasında istatistiksel anlamlı fark görüldü ( $\chi^2=313.76$ ,  $p<0.005$ ). Analiz sonuçlarına göre uygun olmayan su oranı en az ağustos ve ekim aylarında (%8.6) ve en fazla temmuz ayında (%15.4). Uygun olmayan su numune sonuçları arasındaki fark istatistiksel olarak anlamlıydı ( $\chi^2=34.6$ ,  $p<0.001$ ) (Tablo 1, Şekil 1).

**Tablo 1. Aylara göre su numune analiz sonuçlarının dağılımı (Mersin, 2005)**

Aylar	Uygun Su		Uygun Olmayan Su		Toplam	
	Sayı	Yüzde	Sayı	Yüzde	Sayı	Yüzde
Ocak	385	84.6	70	15.4	455	100.0
Şubat	338	87.1	50	12.9	388	100.0
Mart	644	86.6	100	13.4	744	100.0
Nisan	413	87.9	57	12.1	470	100.0
Mayıs	399	87.5	57	12.5	456	100.0
Haziran	463	86.7	71	13.3	534	100.0
Temmuz	512	84.5	94	15.5	606	100.0
Ağustos	645	91.4	61	8.6	706	100.0
Eylül	618	88.0	84	12.0	702	100.0
Ekim	560	91.4	53	8.6	613	100.0
Kasım	625	90.6	65	9.4	690	100.0
Aralık	686	89.3	82	10.7	768	100.0
<b>Toplam</b>	<b>6288</b>	<b>88.2</b>	<b>844</b>	<b>11.8</b>	<b>7132</b>	<b>100.0</b>

( $\chi^2=34.6$ ,  $sd=11$ ,  $p<0.001$ )

**Şekil 1. Aylara göre uygun olmayan su numune analiz sonuçlarının dağılımı (Mersin, 2005)**

Yapılan bakteriyolojik analizlerde bütün su numunelerinin 844'ünde (%11.8) koliform bakteri ürediği ve suyun uygun olmadığı saptandı. Su analiz sonuçları yerleşim yeri ve suyun kaynağına göre değişiklik gösteriyordu. Uygun olmayan sonuçlar köylerde (%33.1), il merkezi (%7.2) ile ilçelere (%14.8) göre ( $\chi^2=360.0$   $p<0.001$ ) ve şebeke suyu dışındaki kaynaklarda (%36.5), şebeke sularına (%10.0) göre

daha fazlaydı ( $\chi^2=306.3$ ,  $p<0.001$ ). Analiz sonuçlarına göre sonbahardaki (%10.1) uygun olmayan su oranı diğer mevsimlerden daha düşüktü ( $\chi^2=8.5$ ,  $p<0.05$ ). Bunun yanında diğer mevsimlerdeki uygun olmayan su oranları birbirine benzerdi. Su analiz sonuçlarının yerleşim yeri, örneğin tipi ve mevsimlere dağılımı Tablo 2'de görülmektedir.

**Tablo 2. Yerleşim yeri, suyun tipi ve mevsimlere göre su numune analiz sonuçlarının dağılımı (Mersin, 2005)**

	Uygun Su		Uygun Olmayan Su		
	Sayı	Yüzde	Sayı	Yüzde	
<b>Yerleşim Yeri</b>					
İl Merkezi	3915	92.8	305	7.2	$\chi^2=360.0$ sd=2 p<0.001
Köyler	392	66.9	194	33.1	
İlçeler	1981	85.2	345	14.8	
<b>Suyun Tipi</b>					
Şebeke	5976	90.0	665	10.0	$\chi^2=306.3$ sd=1 p<0.001
Diğer	312	63.5	179	36.5	
<b>Mevsimler</b>					
İlkbahar	1456	87.2	214	12.8	$\chi^2=8.5$ sd=3 p<0.05
Yaz	1620	87.8	226	12.2	
Sonbahar	1803	89.9	202	10.1	
Kış	1409	87.5	202	12.5	
<b>Toplam</b>	<b>6288</b>	<b>88.2</b>	<b>844</b>	<b>11.8</b>	

Uygun olmayan su analiz sonuçları, yerleşim yeri ve mevsimlere göre birlikte değerlendirildiğinde; il merkezinde yaz

göre kışın daha fazla olduğu ( $\chi^2=8.3$ , p<0.05), köyler ve ilçelerde mevsimlere göre değişmediği saptandı (Tablo 3).

**Tablo 3. Yerleşim yeri ile mevsimlere göre su numune analiz sonuçlarının dağılımı (Mersin, 2005)**

	Uygun Su		Uygun Olmayan Su		
	Sayı	Yüzde	Sayı	Yüzde	
<b>Merkez</b>					
İlkbahar	704	92.8	55	7.2	$\chi^2=8.3$ sd=3 p<0.05
Yaz	935	94.6	53	5.4	
Sonbahar	1325	92.5	107	7.5	
Kış	951	91.4	90	8.6	
<b>Toplam</b>	<b>3915</b>	<b>92.8</b>	<b>305</b>	<b>7.2</b>	
<b>Köyler</b>					
İlkbahar	103	64.4	57	35.6	$\chi^2=6.2$ sd=3 p>0.05
Yaz	116	66.3	59	33.7	
Sonbahar	94	75.8	30	24.2	
Kış	79	62.2	48	37.8	
<b>Toplam</b>	<b>392</b>	<b>66.9</b>	<b>194</b>	<b>33.1</b>	
<b>İlçeler</b>					
İlkbahar	649	86.4	102	13.6	$\chi^2=2.8$ sd=3 p>0.05
Yaz	569	83.3	114	16.7	
Sonbahar	384	85.5	65	14.5	
Kış	379	85.6	64	14.4	
<b>Toplam</b>	<b>1981</b>	<b>85.2</b>	<b>345</b>	<b>14.8</b>	

Analiz sonuçları yerleşim yeri ve İKS kaynağı tipi birlikte değerlendirildiğinde; bütün yerleşim yerlerinde şebeke dışındaki su kaynaklarından alınan numunelerde

uygun olmayan su analiz sonucunun daha fazla olduğu saptandı (merkezde  $\chi^2=225.9$   $p<0.001$ , köyde  $\chi^2=12.0$   $p<0.001$ , ilçede  $\chi^2=97.8$   $p<0.001$ , Tablo 4).

**Tablo 4. Yerleşim yeri ile su tipine göre su numune analiz sonuçlarının dağılımı (Mersin, 2005)**

	Uygun Su		Uygun Olmayan Su		
	Sayı	Yüzde	Sayı	Yüzde	
<b>Merkez</b>					
Şebeke	3719	94.4	222	5.6	$\chi^2=225.9$ $sd=1$ $p<0.001$
Diğer	196	70.3	83	29.7	
<b>Toplam</b>	<b>3915</b>	<b>92.8</b>	<b>305</b>	<b>7.2</b>	
<b>Köyler</b>					
Şebeke	365	69.1	163	30.9	$\chi^2=12.0$ $sd=1$ $p<0.001$
Diğer	27	46.6	31	53.4	
<b>Toplam</b>	<b>392</b>	<b>66.9</b>	<b>194</b>	<b>33.1</b>	
<b>İlçeler</b>					
Şebeke	1892	87.1	280	12.9	$\chi^2=97.8$ $sd=1$ $p<0.001$
Diğer	89	57.8	65	42.2	
<b>Toplam</b>	<b>1981</b>	<b>85.2</b>	<b>345</b>	<b>14.8</b>	

## Tartışma

Toplum sağlığı açısından suyun bakteriyolojik olarak temiz olmasının gerekliliği göz önüne alınca uygun olmayan su oranlarının sıfır olması gereklidir. Ancak kaynağı ne olursa olsun, bütün sular kirlenebilir. Bu nedenle sürekli biçimde temiz ve sağlıklı İKS temini gereklidir. Sağlık Bakanlığı verilerine göre; ülke genelinde 2004 yılında alınan bakteriyolojik su numunelerinin %21.4'ünün sağlığa uygun olmadığı görülmektedir.<sup>11</sup> Mersin'de uygun olmayan su oranı (%11.8) ülke genelinden daha düşüktü.

Ülkemizde suların bakteriyolojik açıdan değerlendirildiği, çoğunluğu kayıtlara dayalı birçok çalışma yapılmıştır. Hasde ve ark<sup>12</sup> su kaynaklarının 10 yıllık analiz sonuçlarını derledikleri araştırmada toplamda %3.9'unda içme ve kullanma yönünden sakıncalar taşıdığını ve

Bahçebaşı ve ark<sup>13</sup> içme ve kullanma sularının 2000 yılında %14.2 ve 2004 yılında %10.9 oranında bakteriyolojik olarak uygun olmadığını rapor etmektedir. Kösecik ve ark<sup>14</sup> suların %58'inin, Pınar ve ark<sup>15</sup> %36.7'sinin, Nazlıcan ve ark<sup>16</sup> %24.7'sinin, Aydın ve ark<sup>17</sup> %24.2'sinin, Atasoylu ve ark<sup>18</sup> %16.6'sının, Avcı ve ark<sup>19</sup> %12.7'sinin, Kara ve ark<sup>20</sup> %12.5'inin bakteriyolojik olarak uygun olmadığını bildirmektedir. Çalışmamızda köyler dışında, bakteriyolojik olarak uygun olmayan su oranları diğer çalışmalara kıyasla daha düşük bulunmuştur. Bu durum bölgemizde su dezenfeksiyon işlemi ve içme suyu şebekesinin daha sağlıklı olduğunu düşündürmektedir.

Buğdaycı<sup>21</sup> kuyu sularının %57.0'sinin uygun olmadığını, Pınar ve ark<sup>15</sup> kaynakların %56.8, kuyu sularının %52.3, şebeke sularının %33.0 oranında uygun

olmadığını, Hasde ve ark<sup>22</sup> kuyu sularının %50'sinin uygun olmadığını, Börekçi ve ark<sup>23</sup> şebeke sularının %17.7, su depolarının %18.5 ve artezyen sularının %82.2'sinin uygun olmadığını bildirmektedir. Çalışmamızda ve diğer çalışmalarda da görüldüğü gibi şebeke dışındaki (artezyen, kuyu suyu vb) su kaynaklarında uygun olmayan su oranları çok yüksektir. Bu durum kırsal bölgede yaşayan ve şebeke suyu dışında artezyen, kuyu suyu kullananların su ve besinlerle bulaşan hastalıklarla karşılaşma risklerinin daha fazla olduğunu düşündürmektedir. Bu su kaynakları sağlıklı duruma getirilene kadar o bölgede yaşayanların hastalıklardan korunmak için bireysel su dezenfeksiyonuna önem vermeleri, bunu sağlamak için de halka bu konuda eğitim verilmesi gereklidir. Kurumlar bu konuda üzerlerine düşen yasal sorumluluğu acilen yerine getirmelidir.

Kara ve ark<sup>20</sup> İKS analizlerinde uygun olmayan su oranlarının ağustos ve eylül aylarında en yüksek (%24.6 ve %23.1) olduğunu, Nazlıcan ve ark<sup>16</sup> aralık, ocak, şubat, mart ve nisan aylarında daha fazla oranda uygun olmayan numune sonucu olduğunu, Avcı ve ark<sup>19</sup> sularda koliform üremesinin haziran ayında %33.5 ile en yüksek görülürken ağustos ve eylül aylarında da diğer aylara göre daha yüksek oranda uygun olmayan su analiz sonuçlarının görüldüğünü, Pınar ve ark<sup>15</sup> Haziran ve Ağustos aylarında %33-46 arasında daha yüksek oranda uygun olmayan su analiz sonucu saptandığını, Atasoylu ve ark<sup>18</sup> uygun olmayan suların %32.0'sinin yaz, %31.8'inin sonbahar, %18.7'sinin ilkbahar, %17.5'inin kış aylarında olduğunu, Hasde ve ark<sup>12</sup> uygun olmayan suların yaz aylarında %4.4, ilkbaharda %2.7, kışın %3.1 olduğunu rapor etmektedir. Çalışmamızda sonbahar dışında diğer mevsimlerde uygun olmayan su oranının ortalamasının üzerinde olması, ocak ve temmuz aylarında en yüksek oranda uygun olmayan su analiz sonuçlarının saptanması diğer çalışma

sonuçlarına uymamaktadır. Bu durum Mersin bölgesinde su kirliliğinin yıl boyu devam ettiğini düşündürmektedir.

Alişarlı ve ark<sup>24</sup> musluk, kuyu, kaynak/çeşme ve depolardan alınan numunelerde uygun olmayan su oranının il merkezinde sırasıyla %20, %38, %56, %0 ve ilçelerde sırasıyla %83, %44, %76, %77 olduğunu, Çalık ve ark<sup>25</sup> kırsal yerleşim yerinden alınan su numunelerinin %81.9'unun bakteriyolojik olarak sağlığa uygun olmadığını, Atasoylu ve ark<sup>18</sup> uygun olmayan su oranlarının ilçelerde %75.1 olduğunu rapor etmektedir. Çalışmamızda köylerde il merkezine göre dört kat, ilçe merkezine göre iki kat fazla oranda uygun olmayan su analiz sonuçlarının olması diğer çalışma sonuçlarına benzerdir.

Araştırmamızda su analiz sonuçlarını yerleşim yeri ve mevsimlere göre değerlendirince; uygun olmayan su analiz sonuçlarının il merkezinde yaz aylarında en düşük, kış aylarında en yüksek olması, bunun yanında ilçelerde ve köylerde mevsimlere göre uygun olmayan su analiz sonuçları arasında fark olmaması il merkezinde şebeke suyunun daha fazla oranda kullanılması ve şebeke suyunun kışın kirlenmesine bağlanabilir. İlçe ve köylerde mevsimlere göre, uygun olmayan su oranlarının birbirine benzer olması buralarda şebeke ya da diğer suların dezenfeksiyonunun yeterli olmadığını düşündürmektedir.

Su kaynaklı hastalıkların önlenmesi, su kirliliğinin önlenmesi ile mümkün olabileceği için düzenli su analizinin yapılması büyük önem taşımaktadır.<sup>17</sup> Çalışmamız sonuçlarına göre; en fazla su numunesi, uygun olmayan su analiz sonuçlarının en düşük oranda saptandığı sonbahar mevsiminde alınmıştı. Suyla bulaşan hastalıkların epidemiyolojisi açısından yaz aylarında daha fazla numune alınması, bu hastalıkların kaynaklarının bulunması ve önlenmesi açısından önemlidir.

Yapılan araştırma sonuçları ve bizim çalışma sonucumuza göre ülkemizde uygun olmayan su analiz sonuçlarının kırsal bölgede, şebeke dışı kaynaklarda ve kış aylarında daha fazla olduğu

görülmektedir. Su ile bulaşan hastalık riski olan bölgelerde yaşayanların bireysel su dezenfeksiyonuna önem vermesi ve bu konuda beceri eğitimi alması gerektiği kanısındayız.

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PEACE, HEALTH, AND HUMAN RIGHTS  
A Model for Reconciliation in the Balkans

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**The Human Rights Foundation**

Historically, the philosophy and concerns about human rights (HR) are associated with the development of mankind and civilization. Almost all religions and beliefs adopted certain rights for individuals and equality among people, even at times of slavery and invasive wars. The recent history records declarations and laws to protect man from humiliation, suffering or discrimination. This usually followed major incidents of atrocities and massive violations of basic rights and struggles for justice.

The model of “Magna Carta”, the Great Charter, is an Example of how rulers formalized certain established concepts of equality and justice upon demand. In 1215, King John of England was forced to sign this charter that emphasized rights, including the right of free citizens to own and inherit property, freedom from excessive taxation, equality before the law and freedom of the church from governmental interference. This was reached as a concession by the king to limit his power and correct arbitrary behaviors as demanded by the barons.<sup>1</sup> The 18<sup>th</sup> century witnessed two major revolutions, the independence of the United States in 1776 and the French revolution in 1789. Both revolutions were associated with major declarations of human rights. In addition,

philosophers in Europe such as Thomas Paine, John Mill and Henry David Thoreau paved the way for HR international advocates like Mahatma Gandhi and Martin Luther King to develop their philosophy of non violent resistance to aggressive governments.<sup>2</sup>

Perhaps the most comprehensive and global human rights standards were founded by “*The Universal Declaration of Human Rights*” adopted by the United Nations General Assembly on December 10, 1948 as a corner stone for its foundation at that time. These clear rights were adopted after long sufferings by communities and nations during World War II including violence, killing, torture, destruction and massacres such as the Holocaust, the atomic bombing and other war horrors. The declaration is composed of 30 articles, describing rights that appear to be basic, fundamental and most logical. Yet preserving these rights is still the dream of humanity and human rights’ advocates. Its justification was described in the preamble of the declaration by stating” *Whereas disregard and contempt for human rights have resulted in barbarous acts which have outraged the conscience of mankind, and the advent of a world in which human beings shall enjoy freedom of speech and belief and freedom from fear and want has been proclaimed as the highest aspiration of the common people,* “

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While the first article of the declaration emphasizes that human beings are born free and equal in dignity and rights who should act towards each other in a spirit of brotherhood, the second article specifies equality without distinction of any kind such as *“race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status.”* Perhaps the simplest yet most frequently violated right is the one described in article 3 *“Everyone has the right to life, liberty and security of person”* Article 8, acknowledging that violations happen, states” Everyone has the right to an effective remedy by the competent national tribunals for acts violating the fundamental rights granted to him by the constitution or law”. Article 25, most applicable during peace or complex emergencies and disasters, presents the right for” a standard of living adequate for health and wellbeing for himself and his family, including food, clothing, housing and medical care”. The declaration continues to describe other basic rights including:

- Justice, impartial trials and equal protection of the law
- Privacy, freedom of movement including leaving the country, asylum or changing nationality.
- Marriage and family formation.
- Freedom of religion, thought, opinion and expression, and peaceful assembly
- Taking part in government in person or through elected representatives.
- Equal access to public service.
- Owning property, social security, fundamental education
- Special care of motherhood and childhood and equal child protection.
- Work, rest, leisure, equal pay and protection against unemployment.

The declaration at the end emphasized the duties of everyone to the community, and the use of rights with limitations determined by the law in respect for the rights and freedom for others.

This declaration, as great as it appears, remains without teeth in most situations. The General assembly proclaimed it as “A common standard of achievement for all peoples and all nations” assuming that its recognition and enforcement is the duty of the state.<sup>3</sup> At the same time, most constitutions and laws emphasize these rights or comparable rights yet its violations are so frequent, especially when committed at a large scale by the state authorities or during conflicts and complex emergencies, i.e. “Situations affecting large civilian populations including wars or civil strife, food shortages and population displacement resulting in significant excess morality”<sup>4</sup> These situations mostly result from armed conflicts or natural disasters.

Because of the severity of violations of human rights during wars and political conflicts, and the generality of the Universal Declaration of Human Rights, the United Nations introduced and adopted a series of other laws, covenants and treaties, especially the International Humanitarian Law, 1949 Geneva Convention and the two additional Protocols of 1977 that determine special human rights during times of wars and armed conflicts. This includes prisoners of war, banning the use of certain weapons and minimizing the impact on noncombatants and civilians.

It is then clear that human rights are not limited to security and protection from violence, or it is freedom of speech and movement, but it extends beyond that to ensure healthy and welfare living including work, leisure, education, healthy standard of living, special care for mothers and children and other aspects of happy enjoyable life.

### ***How and why Human Rights are Violated***

Other than natural disasters, human rights are violated intentionally or collaterally in a variety of ways. The most frequent factors are those that lead to violence within countries imposed by the governing or occupying authority, armed conflicts between groups of citizens, or wars between neighboring countries. A new type of violence and armed conflicts appeared recently which involves attacks or intervention by major powers that assume the responsibility of enforcing the international law, with or without authorization, protecting human rights or defending its own security by preemptive strikes. The current and future situations may be more compounded by the emergence of international movements of groups of extremists and terrorists that has no country to defend or to be attacked, and no government to negotiate with. Escalation of such conflicts, paralleled with the recent violations of the treaty for nonproliferation of nuclear arms is most alarming. The globe may be now placed at an edge of real destruction and catastrophe, unless the global community unites to face this grave danger. Perhaps a good description of this situation is the statement by Alfred Einstein “*I know, not with what weapons World War III will be fought, but World War IV will be fought with sticks and stones*”.<sup>5</sup>

The 20 TH Century is known to be the savviest century in human history with two major world wars that killed 32 millions then 62 millions respectively, involving grave humiliation of communities and destruction of national infrastructures around the world. It was estimated that more than 191 millions were killed in the top 25 wars that took place during this century. The global community then, and before its recovery from WW II, was driven into a growing cold war that lead to many regional and national armed conflicts. Later, the rising hope for universal peace after the end of the cold war in the early 1990’s is proved to be a wishful dream. The number of

significant military conflicts reached 22 to 54 incidents of armed conflicts per year during the period 1989-2003, and the pattern seems to continue or to escalate.<sup>6,7</sup>

The nature and patterns of these armed conflicts changed progressively in the recent decades to be:

- More within countries or across the borders than among countries
- The majority of such conflicts occur in less developing countries, i.e. the most needy with poor populations already exposed to multiple risks
- The majority of casualties, about 80-90%, are among civilians, contrary to the past trend of 60%. For example, during WWII, civilian casualties were 37 millions out of total 62 casualties<sup>7</sup>
- Dramatic destruction of national infrastructure and civilian properties
- More massive displacement of populations, whether internally displaced in the country (IDP) or as refugees in foreign countries
- Long durations or recurrent flare - up of episodes of conflicts without arriving at terminal solutions, even including defeat or surrender of one party
- On the positive side, there is more involvement by the international community in peace keeping and humanitarian assistance. Yet this usually arrives when it is probably too late or less effective

These new patterns of armed conflicts are more seriously affecting human beings by causing more violations of their basic rights.

### ***Major Impacts of Wars: The Global picture and the Balkans***

#### **A. Health Impacts**

Health status of individuals, families and communities suffer the gravest impacts of wars and armed conflicts, knowing that

“Health is the state of physical, mental and social well being and not merely the absence of disease or infirmity”. (World Health Organization Charter, 1948). People affected suffer from the 5 D’s: Death, Disability, Disease, Discomfort and Distress. These sufferings occur either, as direct consequences during the emergencies, or indirect impacts after conflicts due to multiple factors associated with mass dislocation, poverty, food shortage, unsafe environment, violence in shelters and camps, and failure of the debilitated local health systems or facilities to treat infectious diseases especially children, and existing chronic diseases especially in the elderly population. The accuracy of mortality statistics is usually questionable due to poor information systems, under reporting and sometimes over reporting, depending on the reliability and possible bias of the reporting party. The most difficult estimates are those related to the indirect causes of death after the conflicts although in the last ten years, some improved methods for measuring these deaths has greatly improved. Table 1 presents a sample of estimates that appear to have credibility. However, any debate about its accuracy will not change the conclusion.

**Table 1: Estimates of Deaths in Select Armed Conflicts**

Conflict/ war	No. of deaths
Major 25 major wars, 20 <sup>th</sup> century	191 millions
World War I	37 millions
World War II	62 millions
Democratic Republic of Congo	3.3 millions
West Darfur, Sudan	1 million
Rwanda	800,000
Mozambique, 1986-87	100,000
Yugoslav wars 1991-2002	200,000
Iraq- Iran 1980-1988	500,000
Iraq – Collision forces, 2003-2006	200,000*
Lebanon, 2006	1,600*

\*Source: World Health Organization, world Health Report on Violence and Health, 2000.<sup>8</sup>

\*Latest figures on Iraq and Lebanon were published recently in the media. A recent estimate in Iraq is 650,000

The morbidity and disability impacts of wars are summarized in Table 2. Massive dislocation of people as internally displaced persons within the country or as refugees in neighboring countries creates more mortalities, morbidities and disabilities due to:

- Unsafe evacuation or difficult transportation
- Adverse housing and poor shelters’ conditions
- Unsanitary water supply, food and sanitation
- Food shortage, hunger and famines
- Increased crimes and assaults including torture and rape
- Poverty, unemployment and loss of property
- Mental disorders, including suicidal behaviors, depression and or anxiety and post traumatic stress disorders
- Failure of the local health systems to provide adequate care due to disabled or destructed facilities, shortage of equipment, pharmaceuticals, vaccines and supplies, and shortage of health providers due to deaths, injuries or transfer to military operations

**Table 2: Indirect Major Impacts on Health (Post conflicts)**

Mortality	Disability	Morbidity
<b>Main Causes</b>		
- Infectious diseases	- Neglected war injuries	- Complications of chronic diseases
- Chronic diseases	- Violence/ injuries	- Vector born dis.
- Complications of war injuries	- Chronic diseases	- Water born dis.
- Violence / injuries		- Food born dis.
		- Malnutrition/ Starvation
		- HIV/ AIDS (rape)
		- Reproductive disorders
		- Mental health problems

In most situations, internally displaced persons and refugees suffer from these post conflict effects for prolonged periods. Human displacement can continue for years and sometimes for ever. The estimated number of refugees alone was about 6 millions in 1980 that reached about 12 millions in 2003 including 3 millions Palestinians, 2.5 millions Afghans, 2.0 million Iraqis and between 300,000 -600,000 from Burma, Congo, Liberia, Burundi and Angola. The UN High Commission for Refugees (UNHCR) estimated the number of *Population of Concern to the Commission* at the end of 2005 to be about 20.5 millions. These represent only those individuals under the U.N sponsorship.<sup>9</sup>

	No. in millions
Refugees	8.4
Internally displaced Persons (IDP)	6.6
Returned refugees	1.2
Returned IDP	0.5
Asylum seekers	0.8
Stateless persons	2.0
Others	1.0
Total	20.5

## B. Economic Impacts

Wars and armed conflicts deplete national resources, where major resources are shifted from human development to military expenditures and war operations, leading to more violations of basic human rights. This is particularly true for developing and less developing countries that are suffering from poverty and scarce resources, poor health conditions, inadequate health services, higher population increase, and above all, major involvement in armed conflicts that lead to higher military spending. The world military expenditure increased by 23% during the period 1995-2004, and by an annual increase of 6% in the last four years. Countries in North Africa, Sub Saharan Africa, Central Asia and the Middle East had the biggest share of this increase. (Table 3) To illustrate how military expenditure affects spending on human services such as health, Table 4 compares these expenditures and some health indicators in select industrial countries with countries of the west Balkan region. While industrial countries are spending between 8-16% of their GNP on health, most of these countries spend 1-3% of the GNP on armaments and defense. Similarly, during 2003, military spending in North Korea was 33.9%, Mali 15%, Saudi Arabia 13% and Ethiopia 12% of their GNP. Some of these countries spend less than 2% of their GNP on health.

Global military expenditure reached US \$1,083 billions in 2005 as compared to US \$ 950 billions in 2003. As a global target for world development, the United Nations

developed eight Millennium Development Goals that establish the basis for national and international plans. The first goal calls for eliminating severe poverty and hunger, and the price tag to halve this poverty by the year 2015 is \$ 19 billions. This is 1.7% of global military spending in 2005. It was also estimated that

“less than 19 days of global military expenditure is all it would take to meet the additional cost of providing access to food, clean water and safe sewers, basic health care, reproductive health care for women and basic education for everyone around the world.”<sup>14, 15</sup>

**Table 3: World and Regional Military Expenditures Increase, 1995-2004**

Region	% Increase	Region	% Increase
Central Asia	+ 73	North America	+ 34
Africa, North	+ 65	Central/ East Europe	+ 22
Middle East	+ 40	West Europe	+ 4
Sub Saharan Africa	+ 29	The World	+ 23

Source: Stockholm International Peace and Research Institute (SIPRI) (10).

**Table 4: Basic health indicators, health and military spending**

COUNTRY	GNP (\$)/ CAPITA*1	HEALTH as % OF GNP*2	HEALTH % PRIVATE*3	MILITA- RY as% OF GDP	> 5 MORTALITY/ 1000	LIFE EXP. AT BIRTH	
						MALE	FEMALE
<b>Industrial</b>							
- Switzerland	34,621	11.2	42	1	5	78	83
- France	22,753	9.7	23	2.56	5	76	84
- Germany	21,764	10.4	21	1.38	5	76	82
- Japan	33,520	8	22	1	5	78	85
- USA	36,562	15.4	55	3.2	9	71	76
<b>Balkans</b>							
- Albania	1,349	6.1	61	1.49	21	69	75
- Bosnia &Herzegov	1,300	9.2	50	4.5	17	69	75
- Bulgaria	1,834	7.4	47	NA	15	69	75
- Croatia	587	7.3	19	2.39	7	71	78
- Macedonia	1,755	6.8	15	6	12	69	75
- Serbia & Montenegro	1,184	8.1	27	4.8	14	70	75
- Slovenia	10,400	5.9	19	1.7	5	70	78
- Greece	11,477	9.5	47	4.9	6	76	81

Sources:<sup>11, 12, 13</sup>

Notes: \*1-GNP / capita in US \$, estimates of 2003<sup>11</sup>

\*2-Total Health expenditures, public and private including out-of – pocket

\*3-Percentage of the private share of health spending (non-governmental)

Data for Health expenditures are for 2002, for child mortality and life expectancy are for 2003<sup>12</sup>

Data on defence spending as related to the Gross Domestic product (GDP), estimates for 2003 – 2004<sup>13</sup>

Table 5 presents the military expenditures of the west Balkan countries that reached more than \$ 3 billions in 2005 as compared to \$2.5 billions in 2003. If reconciliation, acceptance and tolerance of ethnic and religious differences are achieved leading to a reduction in military spending by 50% in these countries, it is a saving of \$ 1.5 billion every year. This is more than adequate to establish and maintain regional and national projects of reforming health systems, universal health coverage and prevention and control of AIDS/HIV, substance dependence, hypertension, diabetes and cancer - the major killers of populations in these countries.<sup>14, 15</sup>

**Table 5: Military expenditures in the West Balkan, 2005 \***

Countries	US\$ million
- Albania	57
- Bosnia & Herzegovina	146
- Bulgaria	706
- Croatia	620
- Macedonia	200
- Serbia & Montenegro	785
- Slovenia	593
<b>Total</b>	<b>3,107</b>

Source: Center for Arms control and non-proliferation<sup>14</sup>

\*Figures for Albania and Macedonia are for 2003

### ***Strategies for Peace and Preserving Human Rights in the Balkans***

#### **A. Peace and Reconciliation**

It is obvious that the radical solution for preserving human rights for life, security and freedom is to positively establish peace and to eliminate or transform the underlying factors for political conflicts. The West Balkan region

learned the lesson of human suffering and economic disruptions the hard way. Peace making, naturalization of relations and aggressive public education are vital tools to ensure ethnic and religious tolerance and acceptance. National and regional plans for human rights education and changing attitudes and behaviors should be implemented by the educational institutions, the media and civil societies. It is essential at this stage to conduct research and analysis on the deep roots of attitudes and behaviors of individuals and of ethnic groups that lead to these conflicts. This is scientifically more productive than ignoring it or “putting it behind backs”

Unsolved problems need to be handled bilaterally, collectively or through third parties by mutual agreements or arbitration. Negative impacts of suffering, dislocation and property losses need to be remedied as an effective tool of healing and transforming conflicts into peaceful acceptance and tolerance. The current situation of declaring independence of new states can be positively used to serve the purpose of reconciliation since most ethnic groups are now geographically separated in their new independent states, and their relation with each other is mutually determined on the basis of equality, partnership, and membership in the Global and the European communities. Conflict resolution should always be a ready tool to peacefully handle any future disputes. This can happen through the normal diplomatic ties, civil societies, professional associations, or a third international party as the last resort.

#### **B. Developmental Reconciliation**

This is a proven tool of reconciliation and tolerance as it was implemented after WWII. The result is obvious, where recovery from the

sad memories of the war was mainly achieved by engaging all parties into economic development agreements and projects that continued to develop until it established the European Union and beyond. Similarly, the relations between the US and Japan, Russia and South Korea are established on strong economic basis after intensive political conflicts.

The global community, especially the EC, US, Japan and the UN agencies should lead this effort by maximizing the planning and implementation of regional projects in multiple countries. These projects should receive a higher priority in funding over individual country projects. International donors should adopt this approach and resist isolation or individualistic attitudes that push towards country-by- country project although this is usually preferred by traditional administrators since individual country projects can be planned and controlled more simply and effectively.

As a model from the health field, almost all the Balkan nations need to cooperate in the field of health development collectively since their health needs are similar, and where cooperation and coordination, or even integration of certain regional health projects is needed. This is most effective for groups of countries for the scale of economy, and since sharing of experiences provides significant gains by learning from success and mistakes.

*The following are examples of priority regional health projects to be considered.*

*These are projects that almost every country in the region is trying to develop on its own while facing challenges of limited national and donor funding:*

- Reforming health systems to create successful models of public-private partnership, alternatives of health financing and universal health insurance

- Strengthening the efficiency and effectiveness of health services through health management training and preparation of trained leaders and managers of health programs and institutions
- Reforming medical education and training of family practitioners that can respond to the community future needs
- Conducting joint research on major priority problems in health systems and medical care
- Strengthening long term care to cope with the rising volume of elderly populations in the region that promotes better functional and healthy life and reduces institutionalization
- Sharing of costly health resources that may be difficult to afford by one country such as advanced medical referral centers for sub specialties or reference laboratories and research centers.<sup>15</sup>

### **C. Human Rights Advocacy and Observation**

Observation and monitoring of adherence to human rights declarations and regulations is the key factor for its protection. Similarly, observation and adherence to international treaties and agreements is an essential tool for primary prevention of any future violence or political conflicts. Industrial communities are advanced in this respect, where the guardians for human rights are strong civil society advocates, professional associations and specialized human rights organizations. The newly independent Balkan states can learn these lessons through study of these human rights movements and activities as well as forming regional human rights organizations in the Balkans, and joining forces with international groups especially at this time of globalization and free global information.

This activity is new for the region, where advocacy to human rights was often considered, as in many countries to date, an antagonism to authorities. Many corrective decisions are made in the Western world as compromise in the face of strong demand and informed public opinions created by H.R advocates. Authorities and elected representatives may be affected by interest groups and their strong financial lobbying power. Therefore civil society advocates and volunteers, supported by the media, can be a strong effective tool that can shape public opinions. These individuals, grouped in organizations, focus on the humanitarian issues and not political, ideological or religious activism. Professional associations are also good environments for forming such HR movements since they can act regardless of ideology and partisanship. Also groups who are not interested in political parties or partisanship and are disinterested in the political games, or religious individuals who are not fanatics are good candidates for HR advocacy.

International networking with such groups is also a positive aspect of globalization that can protect developing and middle income countries from unjust applications of the World Trade Treaty.

## **CONCLUSION**

- Universal peace is the ultimate solution for ensuring human rights and achieving the global development goals.
- Human suffering as a result of wars and complex emergencies, whether natural or man made, delays development of communities and creates severe violations of the established human rights.
- Human rights can only be enjoyed and fulfilled in an atmosphere and environment of PEACE, DEMOCRACY AND PROSPERITY. It is then the duty of governments and the global community to promote such environment, and to enforce

the observance and adherence to fundamental human rights.

- Peace, conflict resolution and reconciliation are the effective tools for establishing the strong basis for HR.
- Strategies for preserving HR in the Balkan region should involve:
  - Reconciliation, tolerance, and Acceptance through HR education and behavioral changes.
  - Developmental reconciliation by engaging the region into joint developmental programs and projects.
  - Strengthening advocacy for peace and HR and building national and regional capacity through networking with global movements of civil societies to monitor violations and ensure the protection of HR.

In 2005, in a report entitled "In Larger Freedom: Towards Development, Security and human Rights for All", United Nations Secretary General Kofi Anan, urging governments to act, and civil societies to actively participate, states: <sup>16</sup>

“We have it in our power to pass on to our children a brighter inheritance than that bequeathed to any previous generation. We can halve global poverty and halt the spread of major known diseases in the next 10 years. We can reduce the prevalence of violent conflict and terrorism. We can increase respect for human dignity in every land. And we can forge a set of updated international institutions to help humanity achieve these noble goals. If we act boldly—and if we act together—we can make people everywhere more secure, more prosperous and better able to enjoy their fundamental human rights”

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Regulation of Commercialized Healthcare Systems

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Despite criticism, commercialization of the health sector is a reality around the world. In the report of 2008, the World Health Organization addressed some consequences of unregulated commercialization. Inefficiency, high cost, poor quality, supply induced work, dangerous medical practices, erosion of trust and inequity were related to unregulated commercialization.<sup>1</sup> Can these problems be solved with regulation? Are the roots of these problems related to commercialization? I shall discuss these questions based on some evidence from Turkey.

The globalization process had begun in the early 1980s in Turkey and many changes have occurred in the health system since that time. First of all, the government narrowed its role in the planning and regulating of healthcare. Management of the hospitals, management and structure of social security organizations, financing of healthcare, reimbursement and payment models were significantly changed. Nearly all of the not-for-profit hospitals in Turkey have become for-profit organization by revolving funds. With regard to payment to health workers, fixed salaries were replaced with a mix of payment methods which included fixed salaries, revolving funds, and pay for performance. By these methods, health workers' income was strongly associated with the income of their institution. Laboratory, cooking, cleaning and security services in the public hospitals have been carried out by small private companies since the beginning of

1990s. Primary healthcare public services were replaced with a model of the family physician. Primary healthcare has become part of the private sector. The private healthcare sector has also grown faster than the public sector. A total of 308 private hospitals were present in 2008 in Turkey whereas 18 private hospitals were present in 1980. And the social security institution started to buy healthcare from the private sectors. Nearly all of the healthcare organizations have been de facto commercialized.

With regard to problems in our healthcare, supply induced work, overuse, overloading of the services, unnecessary radiation exposure, hospital-centrism, increased healthcare expenditure, and resource waste have emerged as some prominent challenges in recent years. The government has implemented many regulations to solve these problems but these interventions have resulted in a change of the system motivated by profit maximization.

One of these implementations is related to the method of reimbursement. In mid-2006, a fee-for-service method previously used in Turkish hospitals was replaced by a policy of a fixed payment per outpatient. The aim of the intervention was to reduce hospital costs and bureaucracy. The number of procedures per outpatient was significantly reduced during the period of the fixed payment method. The changing practices of the physicians were closely associated with profit maximization<sup>2</sup>.

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One study<sup>3</sup> has shown that Radiological procedures per outpatient were also reduced during the use of the fixed payment method<sup>3</sup>. This study indicated that unnecessary radiation exposure because of profit maximization was an important issue. These two studies support the view that a significant number of the procedures carried out in medical practices were supply-induced work in Turkey<sup>2,3</sup>. The C-section ratio in hospitals has been increased year by year. It reached 43% in 2007(MH). The Ministry of Health had to increase the payments for normal births to reduce the C-section rate.<sup>4</sup>

Patient numbers per year and drug expenditure per capita has increased significantly<sup>4</sup>. At first these can be considered as improvements. However, these are also indicators of hospital-centered healthcare. The amount of curative health care expenditure relative to the total healthcare expenditure is increasing year by year<sup>4</sup>. A packet payment method based on diagnosis has been implemented in order to control surgical expenditures for inpatients.

The situation can be understood better from the speech of the most successful head physician: "Why do I perform ultra-sonography, while there is tomography? An ultra-sonography procedure is 10 Turkish Lira, and a tomography procedure is 60 Turkish Lira." The findings are consistent with the World Health Report which indicates that the provider has the knowledge, the patient has little or none. The provider has an interest in selling what is most profitable, but not necessarily what is best for the patient"<sup>1</sup>.

The proportion of drug expenditure in relation to total healthcare expenditure is significantly higher in Turkey than in OECD countries<sup>5</sup>. The government had to limit drug usage to a maximum of 4 drugs per prescription in order to reduce drug expenditure. Another limitation is related

to drugs by the specialties. Corruption in the healthcare sector is more common than in many other sectors<sup>5</sup>. Despite all efforts, increase in drug expenditures remains an important problem.

All of the evidence indicates that regulation of a commercialized health sector is not cheap and easy. It seems that the root of the problems is in the nature of the commercialization rather than the regulation. Commercialization forces physicians to practise "profit based medicine" and "economic ethics" instead of "evidence based medicine" and "medical ethics". In other words, we were trapped between our conscience and our wallet. On the other hand, it is difficult to implement a good medical practice without independent conscientious behaviour. This is also an obligation of the physician's oath: "I will practise my profession with conscience and dignity..."<sup>6</sup>.

Regulation of commercialization may be possible, but it is extremely difficult and expensive. It needs regulations, organization and well educated newly trained professionals. The United States (US) healthcare system is the typical example of a commercial and regulated health care system. They have strong organizations, regulations and legislations. However, they have failed to provide an equitable and efficient health care system. It has been estimated that the regulatory costs of US healthcare ranged from 58 billion dollars to 339 billion dollars<sup>5</sup>. The US healthcare system is considered enormously wasteful, ill-targeted, inefficient and unfair<sup>7</sup>. The US has a health system in which 31% of total healthcare expenditure was allocated to management and financial bureaucracy.<sup>8</sup> Turkey, like many developing countries, is following this way.

Is there another country which has a regulated, commercialized, cheap and efficient healthcare system? All these

changes are clearly related to the political philosophy of globalization. Commercialization and competition may be useful and suitable for only the leisured classes but not for health for all. Social solidarity is a key value for right to health. All sectors are transforming from a social market economy to a liberal market economy and this is liberal government policy is supported by the World Bank and International Money Fund.

Competition and profit are in the nature of commercialization and of the liberal market economy. Information asymmetry is inherent in health care. In my opinion, it is nearly impossible to combine health and commercialization with evidence based medicine and medical ethics. These consequences are inevitable due to commercialization, and it does not matter whether the health care is regulated or unregulated.

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