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# Contents

# From the Editor

Dear Readers,

In the last issue of 2006, you can find articles about maternal-and child health, environmental health, complementary-alternative medicine; and a short report on obesity which is a very important public health problem of both developed and the developing world.

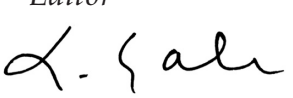
The first two articles covering "alternative and complementary medicine" and "lay management of childhood fever" have some common discussion points. In their research Araz et al. aimed to develop a scale to assess the attitudes of adults towards complementary and alternative medicine (CAM). Findings of this study show that in case of sickness, more than half of the participants used both conventional medicine and CAM and they regard CAM with sympathy. In their qualitative study, Kalaca et al. show that people use various practices in lowering fever before obtaining professional medical help; they also show that most of these practices were similar in both gender groups and were medically beneficial or harmless. We believe that, these two articles provide us an opportunity to think about health seeking behaviours, its determinants, importance and consequences.

Mothers and/or children are taking place in every issue of the Journal as very important and privileged risk groups. In this issue there is one article about risk factors of neonatal mortality and about awareness of women about emergency contraception which can be considered as an important but relatively ignored contraceptive method.

Sutoluk et al. are investigating colinesteraze (ChE) level in seasonal farm workers. It is important to note that no similar study has been performed in Turkey before, to determine the ChE levels in farm workers. Results of this study show that, having lower plasma ChE levels are more frequent among farm workers and this is related to continuous inhalation of OP pesticides. This information is important to take the necessary preventive measures for this particular group of worker.

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

*Editor*



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## Aim and Scope

The Turkish Journal of Public Health (TJPH) is a peer-reviewed research journal published bi-annually and serving a broad audience in the field of Public Health and Community Medicine both nationally and internationally. TJPH aims to provide a medium for the rapid communication of advances and new knowledge in this field. The editor anticipates receiving manuscripts from the following areas of research: health policy and management, biostatistics, epidemiology, environmental health, health economics, medical demography, social sciences for health, health education, public health laboratory, community nutrition, infectious diseases, disaster management, accidents, women's health/reproductive health, child health, chronic diseases, and occupational health.

## Submission of Papers

The following types of contributions are welcomed:

1. Original research articles: papers reporting original research findings in a relevant area (maximum 5000 words).
2. Short reports: preliminary/short reports of research findings (maximum 1500 words).
3. Critical reviews: authors are advised to contact the editor prior to submission of critical review papers (maximum 4500 words).
4. Notes from the field: Highlighting practice-based programs, initiatives of widespread interest, experiences to share with the public health community (maximum 1000 words).
5. Letters to the editor: a limited number of letters to the editor concerning the published papers in the TJPH (maximum 300 words).
6. Data: Data from nationally or sub-nationally representative surveys (maximum 35 tables and figures).

Submissions will be considered on the understanding that they comprise original, unpublished material and are not under consideration for publication elsewhere. A cover letter to this effect should be enclosed with each submission, signed by all authors of the paper.

All papers are published in English although submission of articles in Turkish is encouraged and will not prejudice editorial consideration. The authors may use either the British or the American spelling, but they should be consistent throughout the paper. Submissions undergo a two-tiered review process. The editorial board for overall quality and interest screens them initially. Papers accepted for formal review will be sent anonymously to at least two independent referees.

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Authorship by more than 6 authors requires justification. We adhere to the criteria of the International Committee of Medical Journal Editors (JAMA. 1997; 277:927-934). For manuscripts with two or more authors, each author must qualify by having participated actively and sufficiently in the study that is being carried out and reported on. The inclusion of each author in the authorship list of a report is based only (1) on substantial contributions to (a) concepts and design, or analysis and interpretation of data and (b) drafting the manuscript or revising it critically for important intellectual content; and (2) on final approval by each author of the submitted version of the manuscript. Conditions 1 (a and b) and 2 must both be met. Others contributing to the work should be recognized separately in an Acknowledgement. In the covering letter that accompanies the submitted manuscripts, it must be confirmed that all authors fulfilled both conditions.

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Manuscripts must be typewritten on one side of a white paper, page numbered, and double-spaced with 2.5 cm margins. Good quality printouts with a font size of 12 pt are required. Provide a word count for the paper and abstract. The original copy of text, tables, and figures should be sent to:

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Manuscripts should also be submitted on disk using Microsoft Word. The file on disk should be identical to the hard copy submitted. Tables and figures should follow the text.

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All authors must sign the letter, with one named correspondent (give postal and e-mail addresses and telephone and fax numbers). Disclose all possible conflicts of interest (e.g. funding sources for consultancies of studies of products). A brief indication of the importance of the paper to the field of public health is helpful. You may suggest up to 4 knowledgeable reviewers (include postal and e-mail addresses and telephone and fax numbers).

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The text of the article should include the following: Abstract (up to 250 words, followed by up to 6 keywords), Introduction, Materials and Methods, Results, Discussion, and Acknowledgments. Each section should begin on a new sheet.

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All figures (photographs, drawings, diagrams, charts) should be clear, easily legible, and cited consecutively by Arabic numerals in the text (Figure 1, Figure 2, etc) and should be placed on separate sheets. Legends should contain sufficient detail to permit figure interpretation without reference to the text. Units should be indicated in the figures. All line graphs and their respective data points should accompany charts so that they can be replicated on the journal's computers. Cost for printing of color plates will be charged to the authors.

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*Journal article*

Feldman HA, McKinley SM. Cohort versus cross-sectional design in large field trials: precision, sample size, and unifying model. Stat Med 1994; 13: 61-78.

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*Chapter in a book*

Phillips SJ, Whisnant JP. Hypertension and stroke. In: Laragh JH, Brenner BM, editors. Hypertension: Pathophysiology, Diagnosis, and management. 2nd ed. New York: Raven Press; 1995. p. 465-78.

*Online book or web site*

Garrow A, Winhouse G. Anoxic brain injury: assessment and prognosis. In: Up To Date Cardiovascular Medicine [online]. Available at: www.UpToDateInc.com/card. Accessed February 22, 2000.

## Acknowledgements

Prepare acknowledgments on a separate page. Upon acceptance, you will be asked to certify that you have listed all persons who have contributed substantially to the work but who do not fulfill authorship criteria and that you have obtained permission for listing them. Also required is disclosure of all financial and material support. If human subjects are involved, you must report approval by an institutional review board. TJPH adheres to the Declaration of Helsinki of the World Medical Association (JAMA 1997; 277: 925-926).

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# Developing a scale for attitudes towards complementary and alternative medicine

Arzu ARAZ[a], Hacer HARLAK[b]

## Abstract

The aim of this study was to develop a scale to asses the attitudes of adults towards complementary and alternative medicine (CAM). The survey was conducted with 291 people who have varying socio-demographical characteristics in Aydin, Turkiye. After exploratory factor analysis, confirmatory factor analysis pointed out that the Scale for Attitudes towards Complementary and Alternative Medicine (SACAM) has two distinct dimensions that were highly correlated. Cronbach's alpha for alternative and complementary subscales of the SACAM were computed as .76 and .77, respectively. Alpha coefficient of the total SACAM was .85. Users of alternative ways in company with conventional medicine had significantly higher total and subscale SACAM scores than the users of conventional medicine. Psychometric analyses showed that the SACAM is a valid and reliable measuring instrument to determine the adults' attitudes towards CAM.

Key words: CAM, attitudes, scale, measure, SACAM

## Introduction

The traditional medicine has been used in African, Asian and Latin American countries for a long time. In Western countries it has been also approved as Complementary/Alternative Medicine (CAM) for the last couple of decades.[1] According to The National Centre for Complementary and Alternative Medicine (NCCAM),[2] CAM is considered as a group of diverse medical and health care systems that has not been accepted as a part of conventional medicine. However, recent literature about the use of CAM pointed out that it has been widely used by the people in modern countries.[3-7]

When we question the reasons underlying the CAM use, in addition to many other factors, we are likely to find attitudes towards CAM. As well known by social psychologists, an attitude consists of cognitive, affective and behavioural components.[8] It is generally recognized that attitudes are relevant for understanding and predicting the social behaviour.[9] That is, the attitude towards a specific subject is an important determinant to predict the behaviour related to that subject.[10]

Based on the theory of planned behavior[11] to health, it is frequently noted (e.g. Pitts[12]) that people's attitudes affect the intentions and thus, their health behaviors. Some of these attitudes are related with different solutions for health problems. That is why it is beneficial to explore the attitudes towards alternative ways for treatment in order to understand people's health behavior and medical demand. For instance, if people have positive attitudes towards alternative ways but negative attitudes toward conventional medicine, then it means there would be a problem both for their health and for health services. In addition, using alternative ways together with conventional medicine (that is, complementary use), can cause serious health problems. Therefore, studying the attitudes towards CAM in a society seems necessary.

The relevant literature contains several studies on the attitudes towards CAM. In these studies, the sampling groups have varying characteristics. Some of them consists of medical professionals or trainees[13-26] while the others include the healthy adults or patients.[27-35] However, no matter what

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characteristics that the sample groups have, in those studies the attitudes towards CAM have been measured by different ways. In some studies,[15,22,23] the investigators tried to explore the attitudes with only one item questioning a general evaluation about CAM, while other studies,[13,20,29,34,36] employed no direct measurement concerned with the attitudes. In these latter studies, the attitudes towards CAM were reported based on the participants' responses to the questions about the usage, kinds and sources of knowledge of CAM,[13,20,29,34,36] or a specific CAM technique[28]. Some studies used focus group discussions[31] and the others employed Likert type scales[14,19] to explore the attitudes.

Despite the numerous studies related to the attitudes towards CAM, the number of valid and reliable measuring instruments is very limited. One of them that appeared first was AAMS (Attitudes to Alternative Medicine Scale) constructed by Finnigan[37] in 1991. Although AAMS had been used in some studies,[18,27,32] it was criticised because its construct validity was not confirmed with a factor analysis. Consequently, Hyland, Lewith and Westoby[38] developed Holistic Complementary and Alternative Medicine Questionnaire (HCAMQ) by collecting 6 items from AAMS and 6 items from Holistic Health Questionnaire. HCAMQ was a 6-point Likert-type scale. The alpha for CAM subscale of the HCAMQ for measuring the attitudes towards CAM was calculated as .83. According to the researchers, attitudes towards CAM and holistic health beliefs are related but distinct constructs.

On the other hand, in 1999, Siahpush[39] attempted to answer the question "why do people favour alternative medicine?" In his study, the attitudes toward alternative medicine were measured by totally 6 items with a 4-point Likert-type scale. In reliability analysis, the alpha value of the scale was calculated as .82. This scale was used in some studies.[33] Recently, Bishop, Yardley and Lewith[40] established Complementary and Alternative Medicine Beliefs Inventory (CAMBI) by selecting some subscale items from Siahpush's Scale and, adding new items. CAMBI measures three distinct treatment beliefs: natural treatment, participation in treatment and holistic health.

In summary, the psychometric analyses of the scales developed for measuring the attitudes towards CAM are not fully satisfactory. The construct validity of the AAMS was not established. On the other hand, CAM subscale of the HCAMQ measured the belief about the scientific validity of CAM ("… the belief that CAM is or is not an effective scientific method of treatment compared to conventional medicine") but not the attitudes towards CAM in general. In Siahpush's study, there was no validity analysis for the scale and the items were related to the use of different treatment methods altenatively not complementarily.

The present study aimed to develop a valid and reliable measuring instrument that could be used to explore the attitudes towards CAM. We tried to measure the attitudes towards both complementary and/or alternative medicine in general and specifically their use, so that the scale could be used by researchers who wish to investigate the attitudes towards the use of varying treatment methods together with or without the conventional medicine.

## Materials and methods

After we examined the related literature through Medline, Science Direct and PsycLit databases with the single and combined keywords of "CAM", "attitudes", "scale", "measure", we listed some items expressing favorable and infavorable opinions about CAM. We re-examined the list in order to eliminate the items that have the same or very similar meanings. In addition, the scales previously noted in the introduction of this paper were checked. We adapted five items from several scales: The "placebo effect" of alternative treatments were frequently empasized in the studies such as Lewith et al.[18] and Furnham and Forey.[29] Therefore, we expressed this effect in two items (item no.2 and 10). Item 5 was adapted from Siahpush[39]: "*I would recommend alternative medicine to anyone of my friends who might get ill*". Item 7 was adapted from Lewith et al.,[18] and Hyland et al.[38] "*Complementary medicine should only be used as a last resort when conventional medicine has nothing to offer*". In Siahpush's[39] study, there was a statement such as "*I think most alternative therapists are quacks*". We adapted this expression into "*I think that alternative treatments are completely quackery*" (item no. 8).

The scale (SACAM) with 12 items was organized with responses as 5-point Likert type (5=strongly agree, 4=agree, 3=neither agree nor disagree 2=disagree, 1=strongly disagree). Some of the items (2, 8, 9, 10 and 12) were randomly reversed. An instruction was added to the scale as follows: "It was known that people find various ways for treatment other than visiting a doctor (herbal therapy,

acupuncture, reiki, meaditation, music therapy etc.). Some thoughts about such kinds of therapy were listed below. Please indicate to what extent you agree with each statement by ticking the appropriate box beside." The range of the scores was possibly between 12 and 60. Higher scores meant positive attitudes towards CAM.

In our questionnaire there were also a few sociodemographic questions related to gender, age, education level, marital status, monthly income of the family, and a question about treatment preferences (When you are sick, what is your typical response?). The response alternatives were "do nothing and hope to recover spontaneously", "visit the doctor and comply with her/his orders", "visit the doctor and also seek alternative ways for treatment", "merely seek alternative ways for treatment" and "other".

The survey was performed in Aydin, Turkey. Before giving the questionnaire to the participants, it was noted that the research had been carried out for a scientific purpose. Participation was voluntary and the answers were anonymous. The importance and necessity of their truthful answers were also stressed for the research to be valid. Participants filled the questionnaire individually within approximately 15 minutes. Response rate was 85%.

Data were analysed statistically by using the SPSS version 13 (Statistical Package for Social Sciences) and LISREL 8.3. For all the statistical process, significance level was taken as 0.05. In order to investigate the psychometric properties of the newly developed scale, we computed the Cronbach's alpha reliability coefficient as well as corrected item-total correlations.

To explore the construct validity (factorial validity) of the SACAM, which shows whether the items measure the unique construct or not, exploratory (Principal Components with Direct Oblimin Rotation) factor analyses were conducted. Principal components analysis has been recommended as a descriptive approach to condensation that optimizes a property of data,[41] and have been used to determine empirically how many dimensions (underlying constructs) account for most of the variance on an instrument.[42] The reason for choosing non-orthogonal rotation was that the possible factors for the construct measured with the scale could be correlated with each other.[42] In addition, in order to examine further the results of exploratory factor analysis, confirmatory factor analysis was performed. Finally, as another approach toward construct validation of the scale, the data were analyzed for divergent validity that describes the ability of a measure to produce relevant group differences[41]. The participants' answers to the question *"when you are sick, what is your typical response?"* were considered as the sole criterion in examining the divergent validity of the SACAM.

## Results

The sample of the survey consisted of 143 female and 148 male (totally 291) adults. The mean age of the sample was 35 (±11.9, range=16-83). Of the participants, 57.4% were married, 42.6% were not. The average educational duration was 11.9 years. While 45.4% of the participants had $593 and less, 54.6 % had $594 and more as the family average monthly income.

The extent of each item's contribution to the scale score was evaluated by means of respective item-total correlations. As the correlations of four items (item no 2, 3, 6, 10) with total score were less than .30, they were regarded useless[41] and removed from the scale. After the elimination process, Cronbach's alpha for SACAM with eight items was calculated as .85 (for the 12-items reliability analysis, the alpha value was .76). SACAM items (12 items) and the results of item analysis were displayed in Table 1 and Table 2.

Items of which primary factor loadings were 0.40 or greater, were used in the factor design.[41] The factor loadings of the eight items saved in the scale after item selection procedure are displayed in Table 3. Exploratory factor analysis extracted one factor explaining 49.33% of the total variance (eigenvalue=3.95).

Confirmatory factor analysis showed that the chi-square for one factor model was significant ($p<.001$). When the ratio $\chi^2/d.f.$[43] was used, it was calculated as 2.97 ($p<0.33$). This result seemed that the model fitted to our data. Goodness of fit statistics showed that Goodness-of-fit Index (GFI) indicated good fit, although Adjusted Goodness-of-fit Index (AGFI) was lower than it should be. AGFI should be equal to or less than .95.[44] Comparative Fit Index (CFI)[45] was .92 and indicated that the model reasonably fit well with our data, but RMSEA (Root Mean Squared Error of Approximation) value was not great enough to show good model fit. RMSEA should be equal to or less than 0.08.[46] Consequently, these results convinced us to revise the model. All of the items were grouped into two

category based on their relation to either alternative or complementary medicine and data were re-analyzed for two factor model. The chi-square difference test comparing two models indicated support for rejecting the null hypothesis for indifference (see Table 4). The CFI and RMSEA values indicated better model fit. Path correlations and the correlation between two factors are shown in Table 5.

**Table 1. Items of SACAM (before item analysis)**

1. I think positively about alternative treatments in general.
2. I believe that alternative treatments are effective just because of the practitioner's positive approach and successful communication with the patient.[a,b]
3. In order to treat the sicknesses alternative treatments can be used alone without utilizing conventional medicine.[b]
4. If patients have an illness that cannot be cured by conventional medicine, they must be directed to alternative treatments.
5. In case of sickness, I can orientate my relatives to the alternative treatments besides conventional medicine.
6. I think that alternative treatments should be used by consulting to the doctor.[b]
7. In case of sicknesses that cannot be cured by conventional medicine, alternative treatments could be used.
8. I think that alternative treatments are completely quackery.[a]
9. In order to cure the sicknesses, only conventional medicine should be used.[a]
10. People are recovered by alternative ways because of their strong beliefs about the curative power of these treatments but not with their real effects.[a,b]
11. Alternative treatments can be used in company with conventional medicine so that it could help the treatment.
12. I think that using the alternative treatments is an ignorance.[a]

[a] The items coded reversely.
[b] The items excluded from the scale as the result of the analysis.

**Table 3. Factor loadings as a result of exploratory factor analysis**

| Item | Factor I |
|---|---|
| 1 | .62 |
| 4 | .73 |
| 5 | .76 |
| 7 | .71 |
| 8 | .74 |
| 9 | .60 |
| 11 | .61 |
| 12 | .82 |

**Table 4. Chi-square and goodness-of-fit values as a result of confirmatory factor analysis**

| | $x^2$ | d.f. | GFI (AGFI) | RMSEA | CFI |
|---|---|---|---|---|---|
| Model A (1 factor) | 82.91 | 20 | .95 (0.88) | .11 | .92 |
| Model B (2 factors) | 56.23 | 19 | .95 (0.91) | .08 | .95 |
| Difference between two models | 26.68* | 1 | | | |

* p<.01

**Table 5. The factor loadings of the scale items (confirmatory factor analysis)**

| Item no | Factor I: Alternative | Correlation between factors |
|---|---|---|
| 1 | 0.57 | 0.85 |
| 8 | 0.83 | |
| 9 | 0.72 | |
| 12 | 0.98 | |
| | Factor II: Complementary | |
| 4 | 0.91 | |
| 5 | 0.86 | |
| 7 | 0.82 | |
| 11 | 0.56 | |

**Table 2. The results of the item analysis of SACAM**

| Items | Mean | Std. Dev. | Scale mean if item deleted | Scale variance if item deleted | Corrected item-total correlation | Cronbach's alpha if item deleted |
|---|---|---|---|---|---|---|
| 1 | 3.63 | 1.06 | 36.35 | 44.15 | .46 | .74 |
| 2 | 2.68 | 1.06 | 37.30 | 52.24 | -.11 | .79 |
| 3 | 2.00 | 1.03 | 37.98 | 49.69 | .07 | .78 |
| 4 | 3.43 | 1.26 | 36.55 | 40.90 | .57 | .72 |
| 5 | 3.37 | 1.19 | 36.61 | 40.85 | .62 | .72 |
| 6 | 3.89 | 1.19 | 36.09 | 49.27 | .06 | .78 |
| 7 | 3.59 | 1.20 | 36.38 | 41.43 | .57 | .72 |
| 8 | 3.87 | 1.13 | 36.11 | 41.24 | .63 | .72 |
| 9 | 3.00 | 1.27 | 36.98 | 42.03 | .49 | .73 |
| 10 | 2.71 | 1.15 | 37.26 | 46.28 | .26 | .76 |
| 11 | 3.96 | .97 | 36.02 | 44.63 | .47 | .74 |
| 12 | 3.86 | 1.14 | 36.12 | 39.83 | .73 | .70 |

After SACAM was divided into two subscales, Cronbach's alpha coefficients were calculated as 0.76 for the alternative medicine subscale (item no. 1, 8, 9, 12) and 0.77 for the complementary medicine subscale (item no. 4, 5, 7, 11).

We thought that the attitudes towards alternative and complementary medicine might be different between people who prefer CAM for treatment and who prefer to visit the doctor in case of sickness. We used the question "*When you are sick, what is your typical response?*" in order to discriminate the two groups of people. In responding to this item, 10 participants (3.4%) "*do nothing and hope to recover spontaneously*", 116 participants (39.9%) "*visit the doctor and comply with her/his orders*", 152 participants (52.2%) "*visit the doctor and also seek alternative ways for treatment*", and, 4 participants (1.4%) "*merely seek alternative ways for treatment*". 3.1% (9 person) of the participants marked "*other*". We chose the second (n=116) and third group (n=152) in order to compare the total SACAM scores and subscales scores. One of these groups did not have any alternative way for treatment, whereas the other used these ways complementarily. The t-test revealed that two groups significantly differed ($p < .001$) in terms of SACAM ($t_{(227)} = -4.32$), alternative ($t_{(266)} = -3.78$) and complementary subscale scores ($t_{(223)} = -4.05$).

## Discussion

Several previous studies[3-6] reported that use around of various ways for treatment other than conventional medicine gradually increase in the world. The methods simply referred as CAM are numerous from herbal therapy to Ayurveda and being used alternatively or complementarily. In Turkey, it was observed that many people frequently utilize these methods, yet there is a paucity of research investigating the attitudes towards using of CAM therapies. We thought that building up a standard instrument to measure the attitudes towards CAM is a useful starting point for research purposes as well as for assesing the demand for health services.

In this study, the distribution of the sample by sex and income was fairly balanced. Participants were adults in varying ages and relatively more educated. More than half of them were married.

This study is an attempt for developing a scale to measure attitudes towards CAM. The results of psychometrical analyses implied that the SACAM could be used as a valid and reliable scale. The items of the scale highly correlated with the total score. This findings support internal consistency of the scale, which is a good indicator for the reliability. Considering the alpha 0.70 is accepted as modest reliability[41], the alpha (= 0.85) obtained in our study suggests that the SACAM is a highly reliable measure.

The exploratory factor analysis conducted for construct validity implied that the SACAM consists of one single factor. The results of confirmatory factor analysis however, indicated that the scale has two distinct but highly correlated dimensions. It seems that SACAM can be employed in future research either with total score or two subscale scores in accordance with the researcher's purpose. The statements in "alternative medicine" subscale consists of the opinions related to the use of alternative treatments instead of conventional medicine, whereas ones in "complementary medicine" subscale are about using other ways of treatment together with conventional medicine. These factors pointed out that making a distinction complementary and alternative medicine is a valid and useful strategy. One might say that these two ways of uses are related, yet, their meanings are different.

Our findings revealed that in case of sickness, more than half of the participants used both conventional medicine and CAM. The participants highly agreed with the statement that "Alternative treatments can be used in company with conventional medicine so that it could help the treatment." This suggests that many people do not reject the conventional medicine completely and they regard CAM with sympathy. Our results are in line with some previous studies. Ni et al.[47] reported that U.S adults who use CAM therapies utilize them in conjunction with conventional medical services. Al-Windi[48] noted that CAM is used in addition to the traditional health care system.

To compare the results of the studies concerning CAM use would be highly informative and provide wider understanding about the pattern of health behavior in different populations. However, as Ernst and White[6] emphasized, comparability of the studies related to CAM is limited because of the different measurement methods or instruments. We felt that having a standard scale like SACAM in order to measure the attitudes towards CAM could provide a useful tool for future research (especially

in Turkey). Thus, researchers could have a chance to compare their studies with the others carried out in different times and with different groups.

The present study has some limitations. Considering the sample characteristics, participants of this study do not compose a highly representative sample of the population because of their relatively high level of education. Further research should be carried out with larger samples having different characteristics. Our analyses provided an evidence for construct validity of the SACAM. However, further research addressing predictive validity of the scale, if the SACAM is to be used in order to predict the behaviors, that is, using CAM. The nature of our sample was not suitable to conduct the test-re-test reliability analyses, therefore, further studies are required to evaluate psychometric properties of the SACAM thoroughly.

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# Appendix

## Table 6. Turkish version of SACAM

YÖNERGE: İnsanların hastalandıklarında tıbbi tedavi (doktora gitme) dışında başka iyileşme yolları (bitkisel tedaviler, akupunktur, reiki, meditasyon, müzik tedavisi v.b.) aradıkları bilinmektedir. Aşağıda bu türden alternatif tedaviler konusunda bazı düşünceleri yansıtan ifadeler verilmiştir. Her ifadeye ne ölçüde katıldığınızı yandaki sütunda uygun olan yere (X) koyarak işaretleyiniz.

| | Tamamen katılıyorum | Katılıyorum | Kararsızım | Katılmıyorum | Hiç katılmıyorum |
|---|---|---|---|---|---|
| 1. Alternatif tedaviler konusundaki düşüncelerim genel olarak olumludur. | | | | | |
| 2. Hastalığın tedavi edilemez olduğu durumlarda hastalar alternatif tedavilere yönlendirilmelidir. | | | | | |
| 3. Bir yakınımın rahatsızlığı durumunda onu, tıbbi tedavinin yanı sıra alternatif tedavilere de yönlendirebilirim. | | | | | |
| 4. Modern tıp ile tedavi edilemeyen hastalıklarda alternatif tedaviler kullanılabilir. | | | | | |
| 5. Bence alternatif tedaviler tam bir şarlatanlık.* | | | | | |
| 6. Hastalıkları iyileştirmede sadece modern tıptan yararlanılmalıdır.* | | | | | |
| 7. Alternatif tedaviler modern tıbbın yanı sıra tedaviye yardımcı olsun diye kullanılabilir. | | | | | |
| 8. Alternatif tedavileri kullanmanın cahilce bir şey olduğunu düşünüyorum.* | | | | | |

* Ters kodlanan maddeler.

# Beliefs, attitudes and practices of men and women on childhood fever in a region of Istanbul, Turkey

Sibel Kalaca[a], Hande Harmancı[b], Cagri Kalaca[c], Kemal Kuscu[d]

## Abstract

Aims: This study is planned to explore the lay knowledge, common attitudes in the community, and underlying beliefs of parents concerning fever in their children and attached health seeking practices in Turkey.
Methods: Data was collected from 54 women and 33 men through 10 focus groups in a district of Istanbul.
Results: Respondents reported lay categories of fever in two main lines as "normal fever" and "measles fever". Attached practices for the management of fever were similar in both gender groups and most of these practices were medically beneficial or harmless.
Conclusion: The lay knowledge and cultural understanding of disease, which shaped those lay categories, has important consequences on the communal diagnosis and treatment of measles in Turkey. We believe, studies focusing on cultural interpretation of disease and attached health seeking behaviour enable health care providers to gain further insight about the lay resources of diagnosis and treatment of fever related conditions, particularly measles.
Key words: measles, fever, children, and lay management

## Introduction

Local health care systems integrate patterns of belief about the causes of illness; choices of the treatment, and social interaction and connected agendas such as roles, power relationships and settings[1]. Local networks remain the core and largest portion of health related sectors, gathering individual, family, social network, and community beliefs and practices together. Families, particularly mothers are in the centre of the popular health sector worldwide in developing countries and most of the sickness episodes still receive treatment mainly from them. In the case of childcare, the parents', particularly the mother's own perceived support strongly influences child bearing and thus has an important impact on children[2].

To be effective in promoting children's health, professional health care providers need to be familiar with the explanations and lay practices of the families and caregivers for whom they provide care. Beneficiary elements of these lay medical resources around the local explanation of the illness episode might provide a useful ground for community based health care programs.

Fever is currently one of the main clinical signs in child health and its' management remains as one of the main public health agenda in child health care. Leiser states that its' common occurrence is always viewed with some concern, and parents often acquire extensive experience and exposed to abundant advice and explanations on this topic[3]. Parents have been shown to have unrealistic fears, resulting in inappropriate management of fever in their children[4-7]. Researches showed that better understanding of parents' concerns promote effective communication between health professionals and

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parents and overcome the issue of "fever phobia"[8]. Modification of parents' personal control and perceived threat, using appropriate information and education that acknowledge and address their concerns may be means of empowering parents. Further data on the way families manage such cases and the pathway to local health resources are limited.

In Turkey, fever is one of the most frequent health problems in public health services that children are faced with[9]. Turkey, with a predominantly Islamic population exposed to unevenly developing secularisation, urbanisation, and industrialisation, has moderately high infant and child mortality rates[9]. The infant mortality rate was 274/1000 in 1945, dropped to 199 in 1960 and 29 in 2003. There are significant differences in infant and child mortality between regions, mainly urban and rural areas[10].

The high rate of immigration from northern, eastern and southeastern Turkey to big cities and especially to Istanbul for the last 10 years continuously increased the demand for all types of public services in the newly formed areas. The process of urbanization and internal migration has inevitably caused problems in the provision of services and the emergence of large areas of squatter housing and unplanned cities, unhealthy housing and living conditions, and create problems for the general health of the new inhabitants. The picture is completed with the growing shortage of medical services for these newly established, less structured city areas[11-13].

In the case of management of fever, both the local popular health sector and their beliefs and practices play an important role.

## Aim of the Study

The aim of the study was to determine the beliefs and attitudes of men and women in Sultanciftligi, a working class district of Istanbul, on childhood fever to identify the generally accepted practices relating to pathway to search for care and management of the sickness episode. By doing these we are aiming to familiarise health education and promotion activities in newly established suburbs of Istanbul with local resources and their health beliefs and practices.

## Method

### • Study Area

The study was conducted in 6 neighbourhoods of Sultanciftligi, Istanbul, in 1996. Sultanciftligi is one of the city-suburbs still accepting a high rate of immigration from the Black Sea, Eastern and Southeastern regions of Turkey.

The economic level of the families in the neighbourhood is generally low with men usually working on a daily basis in construction sites. Women are with little or no formal education and commonly do not work outside of home. There is a government Health Unit in the area. One nurse-midwife who is responsible for following up infants and children, women of reproductive age group, pregnant and post-partum women, works in this unit. Other than this government facility, there are private doctor offices in the area.

### • Participants and Data collection

This study is a qualitative descriptive type in which data was collected with focus group discussions. A total of 12 focus group discussions were planned (6 men and 6 women) in each of the six neighbourhoods of Sultanciftligi before the study was launched. As the study progressed, men's groups were stopped after the fourth since no new information came up and responses started to repeat itself[14]. We also observed that men were more reluctant in discussing a health related topic with the research group.

Women's groups, however, created further views on the subject and all six groups were conducted as planned. Women's focus groups were conducted in houses of one of the participants and men's were conducted in local coffee houses where working men gather after work hours and the unemployed spend most of their days. For women's groups, the midwife of the government clinic was asked for names of women who would be willing to participate in the study and who would welcome the group at their homes. Six women were identified and visited at their homes. They were given information as to the reasons and the content of the study and were asked if they would be willing to invite a maximum of 10 women neighbours for a group discussion that would last approximately 1-1.5 hours[15]. None of the men or women rejected to participate in the study.

Focus group discussions were conducted by the authors in teams of two (one facilitator and one observer). The facilitators and observers were the same sex as the focus group participants[16].

A common topic guide was prepared beforehand for both men's and women's groups focusing on the lay explanations of fever and related health seeking behaviours and practices. Group discussions were audio taped after permission was obtained from the participants. The observer also kept notes as to the process of the group discussion. At the end of each day the audiotapes were transcribed. Notes of the observer and the transcriptions were combined to form the daily focus group discussion reports.

### • Data Analysis

At the end of the data collection phase, the researchers listened to the audiotapes following from the transcriptions to check if any data was mistakenly omitted. Content of each focus group was analysed where research findings were regrouped according to key areas of reported categories and practices concerning fever. Different views that emerged regarding each key area were identified and verbatim phrases that best represent each position were pulled out.

The contents of the focus groups concentrated on two main themes: a) the way they explain the major health problem in their children, namely fever and b) the way they deal with such condition. While talking on their practice, participants described also the way they categorize fever through the use of evidence on daily basis.

## Results

54 women and 33 men, with a mean age 32.2 ± 7.7 (women) and 42.4 ± 10.1 (men), participated in focus groups. All of the participants were first generation migrants from Anatolia, mostly from eastern Anatolia and Black Sea region. 63% of the participants had more than 3 children. Thirteen percent of them had an education higher than primary level. The descriptive characteristics of the men and women involved in the study are shown in Table 1.

Several themes were voiced within the focus groups concerning the beliefs and attitudes and attached practices towards fever in children. Measles fever appeared as a separate category in focus group discussions. The key topic areas around these two main categories (fever/measles fever) are presented below:

**Table 1. Some Socio-Demographic Characteristics of Men and Women Participants (Sultanciftligi, 1996).**

| Age Group | Women (n=54) | | Men (n= 33) | |
|---|---|---|---|---|
| | n | % | n | % |
| 15-24 | 6 | 11.1 | 1 | 3.0 |
| 25-34 | 29 | 53.7 | 6 | 18.2 |
| 35-44 | 16 | 29.6 | 13 | 39.4 |
| 45+ | 3 | 5.6 | 13 | 39.4 |
| Range | 17–55 | | 21-70 | |
| Mean ± SD | 32.2 ± 7.7 | | 42.4 ± 10.1 | |
| Level of Schooling | | | | |
| Illiterate | 9 | 16.7 | – | – |
| Literate | 6 | 11.1 | 1 | 3.0 |
| Primary School | 32 | 59.3 | 18 | 54.5 |
| J.High School | 5 | 9.3 | 9 | 27.3 |
| High School | 2 | 3.7 | 5 | 15.2 |
| Number of Children | | | | |
| 0 | 2 | 3.7 | 2 | 6.1 |
| 1-2 | 18 | 33.3 | 11 | 33.3 |
| 3-4 | 25 | 46.3 | 8 | 24.2 |
| 5+ | 9 | 16.7 | 12 | 36.4 |
| Range | 0-9 | | 0-7 | |
| Mean ± SD | 3.2 ± 1.9 | | 3.6 ± 1.9 | |
| Occupation/Husband's Occupation* | | | | |
| **Self employed | 28 | 51.8 | 12 | 36.4 |
| Blue Collar Worker | 21 | 38.8 | 11 | 33.3 |
| White Collar Worker | 2 | 3.7 | 2 | 6.1 |
| Pensioner | 2 | 3.7 | 4 | 12.1 |
| Military | 1 | 1.8 | – | – |
| Unemployed | – | – | 4 | 12.1 |
| Area Migrated From | | | | |
| Eastern Anatolia | 25 | 46.3 | 18 | 54.6 |
| Black-Sea | 25 | 46.3 | 11 | 33.3 |
| Central Anatolia | 4 | 7.4 | 4 | 12.1 |

* Since all women were housewives, their husbands' jobs are presented.

** Painter, plasterer, upholsterer, manufacturer of ready-made clothing, electrician, etc.

### A) Fever

Some of the points that most participants agreed on about fever and some of the observations are as follows (where not specified, the statement is true for both men and women):

- Women were in general locally more informed and more experienced about the management of fever than men. Women in general, stated that fever was a "bad" thing and also that they were "afraid" of it. Men had a more conceptual than

practical knowledge, than women about the management of fever. This was also stressed by several male participants as "women know better."

- A thermometer is only seldom used to diagnose fever.
- In almost all women's groups, there was a general confusion as to whether fever was a cause or a result of disease. In other words, most women did not state any reason for fever but stressed that when fever "comes", it is almost certain to cause a disease or that it will transform itself into a disease. Men seemed to have different ideas about this relationship. Men, in general, think that fever is a manifestation of a certain disease. This belief was stated as "all diseases cause fever" in men's groups. "Havale" (convulsion) was the only "disease" stated as one that can be caused by fever.
- Only one woman stated "nazar" (evil eye) as a cause for fever.
- Fever was classified as "normal fever" and "measles fever" in all groups. Fever that appears without measles was defined as "normal," and fever accompanying measles was clearly distinguished from "normal" by both men and women. This duality seemed to affect the management of fever in children.
- Most practices for the management of fever were common in both gender groups and still most of them were medically beneficial or harmless. "Wiping with a wet cloth" was the most common practice. Women usually mentioned "washing" or "bathing" as experiences encountered in medical facilities. Some members of the men's groups and almost all women stated that "suppositories" or "fever syrups" could be applied either after or simultaneously with the above mentioned practices.
- The most common aetiology of fever in all groups was "catching cold."

## B) Measles/Measles Fever

Measles appears to be one of the major categories of fever in Sultanciftligi. All women, including those with no direct personal experience with measles, gave detailed information about the diagnosis, treatment and prognosis of this disease. This may be due to the transmission of information regarding types of fever from one generation to another generation of caregivers. It was observed that measles was one of the diseases that still generates much fear and frustration. In almost all women's groups, experience of child deaths attributed to measles was mentioned. A common attitude among women can readily be observed with respect to measles.

Women name all the diseases with rash as "cicek" (flower, pox). In the same manner, measles is commonly called "measles flower" or "measles pox"[17]. Generally accepted practices for "normal" fever are not applied, and a child with measles is commonly "left to be."

Women stated various reasons for lowering the "normal" fever in children such as "Would you sit by the fire in a hot day?", or "A feverish person does not want hot, he feels bad, he feels "havale"." However, in all women's groups, it was stressed that one should not try to lower the "measles fever." The only reason for this was the fear that measles would "turn in." The "turning in" of measles was defined as higher fever, worsening condition and death. These findings are similar to the most common and fatal complication of measles, which is pneumonia. All women insisted that "a child with measles should be kept clean." When they were asked what they meant with "clean," they stated "you should not let any water or soap touch the child until the rash disappears." This idea was stated as "sabun yaraya bozar" (soap transforms rash into wound).

The other recommended practices for the management of children with measles by women were as follows:

- Give sweets and measles candy (a dark red coloured candy sold as 'measles candy' in traditional spice shops, with sweet smelling spices added, usually prepared by dissolving in hot water, served either cool or hot[17]. It is also known as "puerperium candy" which is thought to be useful against "puerperal fever"),
- Do not give the child sour or fatty foods,
- Give the child plenty of water.

In almost all women's groups, measles was defined as a "9 day disease" and the natural history was defined as: "It waits for three days, blooms for three days, fades in three days."

When asked how one can differentiate between "normal" and "measles" fever before the rash developed, women gave evidence based observation such as "the eyes get red," "white spots appear in the

mouth," "the area around mouth fades," and "the child gets a runny nose."

While discussing the "measles fever," women also mentioned the measles vaccine. Women generally agree that the vaccine is not given so that the child does not get measles but only so that when s/he has it, it is a much milder disease: "If the child is vaccinated s/he does not feel the measles, if not s/he almost dies".

When compared to the rather "standard protocol" defined by women, men gave more vague definition on measles. Even though measles was the most frequently mentioned disease in relation to fever, it was not defined as one creating much fear and frustration. Men did not mention measles spontaneously unless asked specifically about it.

Like women, men also believe that one should not attempt to lower the measles fever. They believe that the child with measles should be kept warm; otherwise the disease would "turn in."

Among men's groups, especially in groups where new migrants were a majority, the "three day" saying about measles was also mentioned. While all the women participants know this saying, most men could not repeat it properly; some mentioned it as "something with three days."

Men also mentioned, "water with sugar, sweet foods, measles candy" for the treatment of measles. They also stated, however, that the child should be brought to a doctor. Like women, men believe that the measles vaccine helps the child develop a milder form of measles.

## Discussion

This study of lay-people's explanation and management of fever in children gives important clues for the general structure on decision-making and lay practice on health related issues in Turkey. Most of the practices that were mentioned in the management of fever were medically beneficial or harmless except for the management of measles fever. Even though our study was initially planned to determine the categories and practices about fever, measles was also discussed and became a separate topic due to the inclination of the groups. This may be due to the fact that measles, like in many other developing countries, is still highly incident and unacceptably fatal in Turkey due to complications like pneumonia.

Four important points of discussion were derived out of the focus group material to frame of local popular attitudes and practices concerning the management of fever:

### • "Hot" and "Cold"

All the groups classified fever into "normal fever," and "measles fever." Normal fever and measles fever were stressed as two different medical situations, which should be managed by totally different methods. Normal fever was accepted as a "hot" condition where the body temperature should be lowered as soon as possible, since fever may cause "havale" or transform into another disease.

However, measles fever was considered as a "cold" condition with chills which should never be lowered since then the pattern of the disease may be broken and the rash can not develop sufficiently, and so "turns into the body" (causes pneumonia). One of the participants stated, "If washed with water, the child dies of an imbalance of body temperature".

The conditions of 'hot' and 'cold' or 'cool' were constantly employed in popular explanation of health and illness and in medical advice given by folk practitioners in Turkish-speaking town in East Azerbaijan, Iran[18].

Most minor illnesses, according to Hellmann, tend to be classified (by patients and by doctors) according to the way in which they make a person feel ('hot' or 'cold') and the kind of symptoms, which they experience ('wet' or 'dry'). This creates a division between 'colds and chills' on one hand, and 'fevers and infections' on the other. These two different kinds of illnesses are assumed to have different causes and therefore require different kinds of treatment[19].

When the cause is defined as foods or exposure to cold, the management will be relevant with this. People think "cold" can be fought from within, by tonics, oils, by eating warming food and drinking warming drinks. The need to keep the body warm, with hot lemon and honey drinks, hot water bottles, vapour rubs, ample warming food[20].

In our case, not only the interpretation of the bodily temperature, but also the evidence of skin rash, was included to lay diagnosis. Good, in his study in a Turkish speaking community, also found a connection assumed between body heat and skin rash: "I once heard two traditional women trying to

determine the proper herbal remedy for the granddaughter of one of the women. The child had a stomach problem they believed was caused by problems of the liver. ….One woman argued that a hot drug would further heat the child's liver, causing her to have a skin rash"[18]. The inclusion of the skin rash as an evidence changed the pathway of management in our case.

## • Misinterpretation of Different Rashes: The Use of Evidence in Local Management

In our focus groups, we observed that the general inclination was not to wash the child suffering from measles: "Do not let any water or soap touch the child". Women commonly fear that bathing will cause worsening or even reappearance of the rash.

In fact recurrence of a rash with hot bath is not totally incorrect. It happens in erythema infectiosum (fifth disease), but not in measles. It is probable that women cannot differentiate among different childhood exanthemas. It seems that, for some of the participants, the observations of fifth and sixth diseases and scarlet fever have been brought together as a single disease (measles) experience, and so the formulation of the management of measles has also included the following suggestions:

1. Fever should not be lowered since then the rash cannot erupt sufficiently; (high fever resolves, eruption occurs, and child gets better: sixth disease)[21].
2. Hot bath will cause reappearance of the rash; (fifth disease)[22].
3. Measles fever is distinguished from "normal" by the circumoral pallor sign ("the area around mouth fades"), which is clearly a misclassification of scarlet fever[21].

It should be emphasized that consequences of misperceptions in differentiating similar clinical situations with different treatment and prognostic pathways, may be vital in particular when home-based lay management and the "neighbourhood network" are the primary sources for health consultancy for the caregivers.

## • Difference of Male and Female Roles in Child Bearing and Management of Health Problems

An important point of observation is that while women tended to explain illness in more "bodily" concepts and in more concrete terms, men stressed rather abstract ideas within a social context. Since the "social" body as opposed to the "individual" body is powerfully controlled by the larger society[20], it is observed that men, as main shareholders in "social" space in the Turkish society would demonstrate such attitudes. As an indicator of this, socio-economic status was the most important factor that was associated with the concepts of health and illness in men's groups whilst it was not mentioned in women's groups.

Parties involved in case of an ill child are mother, father, the "network", and medical care services. In our case, it was seen that when a child has fever, it is the mother's role to diagnose the "type" of fever, discuss the situation with neighbours (who are exclusively women) in case of indecision as to the "type", and take the necessary steps to alleviate the situation. Fathers get involved in the process if and only if something unexpected happens, like persistent "normal" fever after 1-2 days, or non-appearance of rash after 3 days in "measles" fever. In which case, the father is involved because the woman usually needs permission and financial support to seek professional help. Either in the case of description of fever or decision making, gender plays an important role in Sultanciftligi. Women have to deal more often with the real life scenarios within the micro context where men often get involved during the times when the health condition reaches to a certain level where the further contacts within the public domain (doctors, healthcare centres, hospital) is needed. In this sense women control the local practice while men still hold the gatekeeper role to the social arena in Sultanciftligi. Findings of another study conducted in Istanbul have supported the key roles of fathers in their children's health[23]. The results of research showed that most of the factors related to high childhood mortality were fathers' characteristics and behaviour, household and cultural conditions encircling mother, and only a few of the factors were direct attributes of the mother herself. We believe that this share of roles within health related issues has important consequences on service use both in local and wider urban setting. This shapes also a parallel local referral system for most of the caregivers who do not have access to outside resources.

## • "Neighbourhood Network"

Being the responsible person for child health, women generally apply to other trustworthy women

living in the neighbourhood before seeking professional medical help. To have a working "neighbourhood network" is not surprising. First of all networks or social support systems of family, friends, or workmates are convenient because they utilize those living or working in close proximity, which allows for almost instant "accessibility". Another important reason for that may be that it does not cost any money to consult neighbours.

While holding a responsibility of child bearing, women are generally less educated then men, which makes them more dependent on men and less mobile in the city in general. Obtaining "professional medical help" generally means travelling into the big metropolis of Istanbul and, maybe worse, entering a complex hospital system. When the solution of the problem exceeds the limits of the "network", the responsibility and -limited- attention of father begins. Factors including insufficient social security coverage and unemployment, limit the willingness of men in utilizing hospital services. In Turkey one third of the population has no health insurance[24]. Men believe that if they earn better, the health of the family will also improve. As mentioned above, their priority in improving the health of the family is the achievement of a better socio-economic status.

However it is certain that people are open to seek better medical services. It was observed that women are sensitive and eager to hear the recommendations of health personnel "in an understandable language." Women repeatedly gave reference to their contacts with health personnel. They remembered in detail when the doctor/nurse said "good for you to do that" (like washing the feverish child). These facts were wholeheartedly recommended to the other members of the groups. Thus, time of contact with a health professional definitely seems like an important time and opportunity to give correct messages to women. We believe that one should not wait for the perfect community health education program, but use the moment of service provision to give correct messages with a clear language.

The results of the study show the line between personal explanation of fever and related evidence and the local pathways of management and care. The findings illustrate the importance of awareness of health professionals about the explanations, knowledge, beliefs and values of lay people and popular health care sector within the community about health and illness, so that this information can be utilized for more effective communication, health education and community participation programs.

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# Investigation of causes and risk factors of neonatal mortality

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## Abstract

The objective of this case-control study is to determine the risk factors for neonatal deaths in the province counties of Izmir metropolitan of Turkey. The neonatal deaths (n=79) reported between July 1st and September 30th 2000 formed the case group. The control group consisted of healthy infants (n=158) living in the same neighbourhood and born in the same month. The families of both case and control groups were interviewed. Prematurity and low birth weight were the most frequently reported conditions. The risk factors most strongly associated with neonatal mortality were prematurity, low birth weight, caesarean and dystocic delivery, previous history of child death and lack of family health insurance. The improvement of quality, quantity and accessibility of antenatal care, and socioeconomic conditions are expected to reduce neonatal mortality.

Key words: Neonatal mortality, prematurity, antenatal care

## Introduction

Important differences in mother-child health indicators are observed between developed and developing countries. In UNICEF's The State of The World's Children 2003 report, under-five child mortality rate was 0.03% in Sweden and 0.05% in Finland, compared to 0.45 in Turkey[1]. The causes of infant mortality vary from developed to developing countries. In developed countries, while the majority of infant deaths are due to causes which are difficult to prevent like congenital anomalies, premature deliveries, metabolic and genetic diseases; in developing countries, they are mostly due to causes related to socioeconomic and generally preventable conditions such as infectious diseases and birth traumas[2].

Improvements in antenatal, delivery, postnatal care and treatment decrease preventable neonatal deaths. Increasing awareness about the causes and risks of neonatal deaths and the development of a surveillance system for the implementation of preventive measures may reduce related risks. The aim of the present study is to investigate the causes and risk factors of neonatal deaths in Izmir, Turkey.

## Material and Methods

This case-control study investigated the causes and risk factors for neonatal mortality among cases of neonatal deaths and healthy infants living in the same neighbourhood within province counties of Izmir metropolitan.

The neonatal deaths occurring in these counties are registered and monthly reported to the Provincial Health Directorate by the physicians of primary and secondary level health institutions. All neonatal deaths (n=79) reported in the interval of July 1st – September 30th 2000 were included in the case group. The control group (n=158) consisted of two living infants per each infant death from the same neighbourhood and born in the same month. With similar characteristics as the case group, the control group was determined with the help of midwives who knew the infants' families through regular house visits.

The families of 73 out of 79 (92.4%) neonatal deaths in the case group and 151 out of 158 control infants (95.6%) were contacted. Since there were three twins in the case group, only 70 parents

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were interviewed. The investigator (HO) visited the health centres with reported neonatal deaths to complete the first section of the questionnaire consisting of descriptive data from the records of health centres. She then visited the case and control group families to collect information on the independent variables. Data collection was accomplished during the November 2000 - January 2001 interval.

Dependent Variable: Neonatal deaths

Independent Variables: Family-related factors (educational level of mother and father, family income level, health insurance), maternal factors (age, pregnancy and child delivery history, receipt of antenatal care), type of delivery, infant related factors (gender, birth weight, age of death).

SPSS for Windows 10.0 (SPSS Inc., Chicago, Illinois) and Epi Info 2000 software (Version 3.3.2, http://www.cdc.gov/epiinfo/) were used for data analysis. Chi-square, Fisher's exact test, t test and logistic regression analysis were used for the evaluation of data.

## Results

Three-quarters (74.0%) of neonatal deaths occurred in early neonatal period (0-6 days) and 26.0% in late neonatal period (7-27 days), with just over half (55.4%) occurring in the first three days of life. Among these early deaths, 19 (26.6%) occurred on the day of delivery, 11 (15.1%) on the day after delivery, and 10 (13.7%) on the second day.

The most frequently reported causes of neonatal mortality were prematurity and low-birth-weight related diseases, followed by congenital anomalies.

As seen in Table 1, the gender distribution of neonatal deaths was 64.4% males and 35.6% females compared to 49.7% males and 50.3% females in the control group (OR=1.83, p=0.04).

A statistically significant relationship was found between neonatal deaths and type of delivery (p=0.009). Infants delivered with caesarean section, vaginally with instrument and dystocias had a 2.14 times higher mortality than normal vaginal deliveries (Table 1).

The multiple delivery rates for case and control groups were 11.0% and 2.0% respectively. There was a statistically significant (p=0.003) difference between them. The likelihood of a multiple delivery was six-times greater in the case group than in the control group - 11.0% and 2.0% respectively (OR=6.07, p=0.003).

Compared to the control group, infants born under 2.500 grams were higher in the case group. As seen in Table 1, the percentage of low birthweight babies was approximately 10 times higher among cases (52.1%) than controls (5.3%) (OR=19.4, p=0.001).

A 15 fold difference between the groups was noted with regard to premature births. The percentage of premature births in the case and control groups were 60.3% and 4.0% respectively (OR= 36.6, p=0.001) (Table 1).

The mean maternal age at the time of delivery was 26.64±0.65 and 25.58±0.41 for case and control groups respectively and there was no statistically significant difference between them (p= 0.168).

**Table 1. Infant and delivery related variables which may effect neonatal mortality**

| | Cases | | Controls | | Odds Ratio | 95% Confidence Interval | $x^2$ test p-value |
|---|---|---|---|---|---|---|---|
| | Number | % | Number | % | | | |
| Gender | | | | | | | |
| Male | 47 | 64.4 | 75 | 49.7 | 1.83 | 0.99-3.40 | 0.038 |
| Female | 26 | 35.6 | 76 | 50.3 | | | |
| Type of delivery | | | | | | | |
| Caesarean / interventional or dystocic delivery | 33 | 45.2 | 42 | 27.8 | 2.14 | 1.15-4.00 | 0.009 |
| Normal vaginal delivery | 40 | 54.8 | 109 | 72.2 | | | |
| Birth weights | | | | | | | |
| 2499 grams or lower | 38 | 52.1 | 8 | 5.3 | 19.41 | 7.81-49.83 | 0.001 |
| 2500 grams or higher | 35 | 47.9 | 143 | 94.7 | | | |
| Gestational age | | | | | | | |
| 36 weeks or earlier | 44 | 60.3 | 6 | 4.0 | 36.66 | 13.36-106.21 | 0.001 |
| 37 weeks or later | 29 | 39.7 | 145 | 96.0 | | | |

**Table 2. Mother and family related variables which may effect neonatal mortality**

| | Cases | | Controls | | Odds Ratio | %95 Confidence Interval | p-value |
|---|---|---|---|---|---|---|---|
| | Number | % | Number | % | | | |
| History of abortion | | | | | | | |
| Yes | 20 | 28.6 | 33 | 21.9 | 1.43 | 0.71-2.86 | 0.277* |
| No | 50 | 71.4 | 118 | 78.1 | | | |
| History of stillbirth | | | | | | | |
| Yes | 6 | 8.6 | 3 | 2.0 | 4.63 | 0.99-24.19 | 0.030** |
| No | 64 | 91.4 | 148 | 98.0 | | | |
| History of child health | | | | | | | |
| Yes | 7 | 10.0 | 3 | 2.0 | 5.48 | 1.22-27.75 | 0.013** |
| No | 63 | 90.0 | 148 | 98.0 | | | |
| Antenatal care visits | | | | | | | |
| 5 and lower | 37 | 52.9 | 55 | 36.4 | 1.96 | 1.06-3.62 | 0.021* |
| 6 and higher | 33 | 47.1 | 96 | 63.6 | | | |
| Health insurance | | | | | | | |
| No coverage | 29 | 41.4 | 41 | 27.2 | 1.90 | 1.00-3.59 | 0.034* |
| Coverage exists | 41 | 58.6 | 110 | 72.8 | | | |

* Chi-square test

** Fisher's exact test

As for the educational level of mothers, 88.7% had completed primary school or higher with no statistical difference between the case (87.1%) and control (79.4) group mothers (p= 0.621).

The percentage of mothers with a history of abortion was 28.6% in the case group and 21.9% in the control group. The proportion of mothers with a previous history of stillbirth was 8.6% in the case group compared to 2.0% in the control group (OR=4.63, p= 0.030) (Table 2). The mothers with a previous history of child death were 10.0% and 2.0% in the case and control groups respectively, and there was a statistically significant difference between them (OR=5.48, p=0.013). (Table 2).

There were no statistically significant differences between the case and control group regarding desired pregnancy, history of chronical disease, disease during pregnancy, consanguinity, drug use or smoking during pregnancy.

As seen in Table 2, slightly over half (52.9%) of the mothers in the case group made 5 or less antenatal care visits compared to about one-third (36.4%) in the control group (OR=1.96, p=0.021).

Mothers of both groups received most of their antenatal care from primary health care midwives. The proportion that reported physician-provided antenatal care was very similar in both groups. Receipt of antenatal care from midwives only was reported by 40% and 35% of mothers in the case and control groups, respectively.

The family income was declared to be low in 14.3% of the case group and 9.9% of the control group.

A significant difference between the groups was noted regarding health insurance with 41.4% of the case families and 27.2% of the control families not having health insurance coverage (OR=1.90, p=0.034) (Table 2).

Logistic regression analysis applied to the nine variables was found to be differing statistically between the case and control groups. Logistic regression is conducted with backward elimination method using Wald statistics.

As seen in Table 3, five variables remained in the model at the last stage as significant correlates of neonatal mortality in this sample. The factors most strongly associated with mortality risk were: gestational age shorter than 37 weeks (OR= 23.31), previous child mortality history in the family (OR=8.28), birth weight under 2500 grams (OR= 4.21), lack of health insurance (OR= 4.05), and caesarean section, dystocic deliveries (OR= 3.91).

**Table 3. Results of multivariate logistical regression modelling of factors associated with neonatal mortality, Izmir Province, Turkey, 2000.**

| Variable* | Regression coefficient | Standard Error | p-value | Odds Ratio | 95% Confidence Interval |
|---|---|---|---|---|---|
| Gestational week (reference group ≥ 37 weeks) | 3.149 | 0.644 | 0.000 | 23.31 | 6.59-82.37 |
| Previous history of child death (reference group: none) | 2.114 | 0.829 | 0.011 | 8.28 | 1.63-42.08 |
| Birth weight (reference group ≥ 2500 gr) | 1.439 | 0.629 | 0.022 | 4.21 | 1.23-14.48 |
| Lack of health insurance | 1.398 | 0.446 | 0.002 | 4.05 | 1.69-9.70 |
| Type of delivery (reference group = normal vaginal delivery) | 1.362 | 0.428 | 0.001 | 3.91 | 1.68-9.03 |

* Variables not included in the final model: gender, multiple delivery, history of stillbirth, and number of antenatal visits

## Discussion

The present study's finding that 74% of neonatal mortality occurred in the first week of life is consistent with the findings of other studies carried out in Turkey, which shows that two thirds of neonatal mortality occurs during the first week of life[2].

In a study carried out in Toronto, Canada in 1997, it was found that the most critical hours for a newborn infant are the first 36 hours, during which period they should be very closely observed. In case of early discharge from hospital without observing this rule, infants face a three times higher risk of death compared to closely observed infants[3].

In an earlier study carried out in the USA, the most frequent causes of neonatal mortality were congenital anomalies (23.5%), prematurity related causes and low birth weight (15.4%), respiratory distress syndrome (13.5%) and pregnancy complications (6.0%)[4].

In the present study, the causes of neonatal mortality were similar to those observed in developed countries. The observation that 41.1% of neonatal deaths were related to prematurity and low birth weight led to the belief that preventive efforts should be concentrated on these issues.

In the present study it was found that 17.8% of neonatal deaths were due to congenital anomalies. In developed countries where preventable causes are reduced, this rate may seem higher. The development of medical technology facilitated the diagnosis of serious anomalies during pregnancy. These diagnostic facilities should be accessible to all high risk families, not only to those with health insurance.

In the present study, 64.4% of neonatal deaths were males. It was found that male infants had a 1.8 times higher risk of mortality in the neonatal period. This finding is consistent with the findings of other studies on the gender distribution of infant and child mortality in Turkey[5,6].

Type of child delivery and perinatal complications generally affect early neonatal deaths[7,8,9]. In the present study, the probability of infant mortality following a caesarean or interventional deliveries or dystocias was 2.14 times higher than non-interventional deliveries. This result strongly suggests that caesarean deliveries and interventional deliveries should only be carried out in case of medical indications. Unnecessary or excessive interventions during deliveries, especially in the absence of adequate perinatal care services may pose an additional risk factor. Caesarean deliveries, when carried out without determining the gestational age, may indirectly contribute to infant mortality by increasing the number of premature births[7,8,9].

The probability of neonatal mortality due to multiple pregnancies was higher than singleton deliveries. The birth weight among multiple pregnancy infants was generally lower than those of singleton deliveries. Higher rates of premature births, maternal complications and congenital anomalies were observed in multiple pregnancies and are considered as the most important reasons for the increased probability of multiple pregnancy-related infant mortality[2]. In the present study, the probability of neonatal death following multiple deliveries was found to be 6 times higher than singleton deliveries. A study carried out in Australia in the 1991-1993 period, observed that multiple deliveries composed 10.5% of perinatal infant deaths and the rate of perinatal infant deaths was 4.1 times higher in twins compared to singleton deliveries[10]. A study based on birth records in the USA, between the years 1980-1997, showed that compared to singleton deliveries, low birth weight was 33 times and infant deaths were 4 times more frequent[11].

In the literature, higher mortality rates are observed in infants with birth weights lower than 2500 grams or higher than 4000 grams[3,12,13]. The results of the present study showed that infants with a birth weight less than 2499 grams had a 19.41 times higher mortality risk compared to those weighing 2500 grams or higher. A study on infant mortality carried out in the USA, showed that neonatal deaths made up two thirds of all infant deaths and the birth weights of more than half of those cases were less than 1500 grams[12].

It is known that infant, especially neonatal, mortality rates are affected by shorter or longer than normal duration of pregnancy[2,12]. This risk further increases in pregnancies shorter than 37 weeks (premature delivery). In the present study, mortality risk of premature infants was 36 times higher than other infants. Premature deliveries are the leading causes of neonatal mortality in the world[2]. As one of the most important causes of infant mortality, the recognition and prevention of the causes of premature births are important for the reduction of neonatal deaths.

In the present study, infants born to women with a history of prior child death had a 5.5 times higher mortality risk than other infants. It is known that in mothers with a previous history of stillbirth, the probability of infant death is increased[14]. It is assumed that causes of stillbirth like anomalies, maternal chronic diseases, Rh incompatibility, intrauterine growth failure, pre-eclempsia and eclempsia may increase the risk of perinatal and neonatal mortality in subsequent pregnancies. In this study, infants born to women with a prior history of stillbirth evidenced a two-fold higher risk of neonatal mortality compared to other infants.

Antenatal care may be defined as follow up of a pregnant woman and her foetus at regular intervals with necessary examinations and counselling by a health personnel during the pregnancy. In Turkey, primary health care personnel are expected to diagnose a pregnancy before the 12$^{th}$ gestational week and to examine the woman at least 6 times throughout the pregnancy. Antenatal care includes the diagnosis and treatment of probable maternal diseases, promotion of maternal health, timely diagnosis and treatment of pregnancy-related disorders and training of mothers on nutrition, hygiene, readiness to delivery and infant care. In this study, the infants of mothers who received insufficient antenatal care (5 or less visits) had a 1.96 times higher mortality risk compared to those who received sufficient antenatal care (6 or more visits). This finding is consistent with the findings of previous studies[12].

In the 1998 Turkish Demographic and Health Survey, the neonatal mortality rate was 0.37 % in mothers who did not receive medical care during pregnancy and delivery, vs. 0.23 % in those who received sufficient medical care during pregnancy[5].

Health insurance status of families is another variable investigated in this study. It has been reported that 60% of the Turkish population is covered by health insurance[16]. A nearly two times higher neonatal mortality rate in families without health insurance coverage is consistent with the assumption that families' accessibility to healthcare is directly related to their health insurance coverage status.

Results of multivariate regression analysis suggest that gestational age less than 37 weeks, birth weight lower than 2500 grams, caesarean, interventional and dystocic deliveries, prior history of child death in the family, lack of family's health insurance are the factors most influencing neonatal mortality.

The qualitative and quantitative improvement of antenatal care in the primary care settings, provision of more readily accessible health services and improvement of socioeconomic conditions are expected to reduce preventable causes of neonatal mortality.

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# Awareness, and willingness to use emergency contraception among women attending to Primary Health Care Center

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## Abstract

Objectives: This study is aimed to assess the awareness and willingness to use emergency contraception (EC) in the future among women attending to primary health care centers.
Method: A questionnaire was applied by face to face interview to 215 ever married women who attended three primary health care centers in Ümraniye, Istanbul.
Results: Half of the women have not ever heard about EC and believed that it was impossible to prevent pregnancies after an unprotected sexual intercourse. Nearly half of the women who have heard about EC did not know the proper meaning of EC. Whether or not respondents had heard of EC was significanly associated with the level of education and previous unintended pregnancy history. Half of the women including those who first learned about EC during this study stated a willingness to use EC in the future if the need arose. Willingness to use EC in the future was significanly associated with education, age, employment status and previous induced abortion history.
Conclusion: EC knowledge of women was not sufficient. Service providers should inform all women attending to the clinic for any reason about EC. Abortion clinics and pharmacies should be a part of EC counselling.
Key words: Emergency contraception, awareness, willingness, primary health care

## Introduction

Unintended pregnancy, all over the world, is a major medical, social and public health problem which has unfavourable effects for the individual woman and the society[1]. According to World Health Organization (WHO) each year 80 million women experience pregnancies that they did not want[2]. These unintended pregnancies may be the result of contraceptive method failure, misuse of the contraceptive method, not using any contraceptive method or sexual assault. Whatever the reason is, an unintended pregnancy leave women with difficult decisions including induced abortion or adaptation to that pregnancy and to bear an unintended child. Nearly 45 million unintended pregnancies end with induced abortion each year worldwide[2] and of all unintended pregnancies 54% end with delivery[3]. There are severe social, personal and financial consequences of unintended pregnancies and unintended deliveries: lack of prenatal care, high maternal and infant mortality, low birth weight deliveries, harmed newborns, and financial disadvantages related with poor life conditions and health[1]. Induced abortions also have serious medical and psychological health hazards[4]. Researches concerning women experiencing induced abortions reveal that many women undergo a sense of guilt, anger, committing a sin, or similar feelings[5]. However prevention of an unintended pregnancy after an unprotected intercourse or method failure is possible with emergency contraception (EC) treatment which is the use of hormonal or mechanical methods (Intrauterine devices) to prevent pregnancy[6]. The overall protection provided by EC (all methods) is reported in various studies to be approximately 75 percent (range 55 to 94 percent)[7, 8].

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If induced abortion and child bearing is considered, EC is the safest choice for women experiencing an unprotected intercourse and do not want to get pregnant. The most important difference between regular contraceptives and emergency contraceptives is that, emergency contraceptives are used after the sexual intercourse and gives the women a second chance for protection from an unintended pregnancy[9,10].

According to Turkish Demographic Health Survey 2003, 20% of all pregnancies among ever married women are unintended and 79% of unintended pregnancies end with delivery, 11% with induced abortion and 10% with miscarriage. The use of any EC method in Turkey is reported as 0.6%[11].

Emergency contraceptives available in Turkey include combined oral contraceptive tablets, levonorgesterel-only contraceptive tablets and the Copper-T intrauterine device. Until year 2003 hormonal kits that are used for EC were not available in the market in Turkey. In the primary health care centers hormonal emergency contraception was applied with the combined oral contraseptive pills that contain 50 µg or 30 µg etinilestradiol which also were given free of charge in the family planning clinics by service providers.

The main objectives of this survey, was to assess the awareness and willingness to use EC in the future among women attending to primary health care centers.

## Method

This study was conducted in three health-care centers in Umraniye which is one of the biggest county boroughs in Istanbul, Turkey. One of these centers was a maternal-child health and family planning clinic and the other two centers were primary health care centers which provide ambulatory care, immunizations, reproductive health services and community health education. Family planning counselling service is given free of charge in these clinics. The content of counselling prepared by the Ministry of Health is based on the illustrated family planning guide which contains information about reproduction physiology, importance of contraception and contraceptive methods. The guide does not contain any information about EC. Ever married women attenting to the reproductive health services of these health care centers during a two week period on February 2005 were included in the study. In order to catch the women who are not using any contraceptive method or using coitus interruptus, women attending the clinics for vaccinating their children were also included in the study. All the participants were informed about the study in order to get their informed consent. A structured questionnaire was applied by face-to face interview by the first author and two medical students. The interviews were 15 minutes in length.

The questionnaire consisted of mainly three parts: The first part assessed the demographic characteristics, reproductive history, current contraceptive use and attitude towards induced abortion. In the second and third part of the interview, awareness and willingness to use EC in the future were assessed. Knowledge about possibility of preventing pregnancy after an unprotected intercourse and awareness of emergency contraception was assessed by the following questions "*If a women just had an unprotected sex and thought she might become pregnant, is there anything she could do to prevent pregnancy, or not?"* and a seperate question *"If you just have had an unprotected sex or method failure like condom breackage and think you might became pregnant, what would you do?"*. Awareness to EC was asked as "*have you ever heard of EC, also called morning after pills or postcoital contraception or not?*" If the respondent had heard about EC, we asked a second question "*What is emergency contraception?*" to get an understanding if she knew the meaning or not. Because we assumed that if a woman has never heard of EC, she had no further detailed knowledge about it. Detailed information about EC was assessed only if the participant had known the proper meaning of EC as *"a method used to prevent pregnancy after an unprotected intercourse*". If the respondent had never heard of EC or had heard of EC but did not know the meaning of it, following questions about timing and types of EC was skipped. At the end of the interview all participants were briefly informed about EC. Then willingness to use EC in the future were asked to all women (except the ones who have had tubal ligation and therefore were not potential users for EC), including those unacquainted with emergency contraception before. Lastly an informational handout on emergency contraception focused on the purpose and effectiveness of EC, how and when to use it, brands and dosages of oral contraceptives that can be used for EC, side effects were given to all participants for future need. Women who needed family planning consultation were referred to the reproductive health service provider.

### Statistical Analysis

The SPSS-11.0 software program was used for data analysis. Frequencies of demographic characteristics were determined. Responses to EC questions were compared by demographic characteristics using Chi-square test and Mann Whithney-U test. All analyses were two- tailed and for statistical significance criterion were indicated by $p < 0.05$.

## Results

All women who were informed about the study accepted to participate.

The mean age of 215 ever married women was 30.33 (range 19 -49). The educational level of 70.7% of the women was primary school or less; 80.9% of the women were unemployed. Overall 92.1% (198 women) stated that they did not want any more children. Among women who stated that they did not want any more children in the future, one hundred and fifteen (58.1 %) were currently using condom, withdrawal or no contraceptive method (Data was not shown). Demographic, contraceptive use and reproductive health characteristics of the study population are summarized in Table 1.

Ninety-six women (44.7%; 95% CI 38% to 51%) reported at least one previous unplanned or unintended pregnancy. Fourty-seven (49.0%) of these unintended pregnancies ended with birth, fourty-two (43.8%) with induced abortion and seven (8.2%) with miscarriage. Three of those seven women with miscarriage stated that if miscarriage would not occur, they would have an induced abortion. Fourty-nine of the participants (22.8%; 95% CI 17% to 28%) reported at least one induced abortion in the past.

Sixty-six (30.7%) women approved induced abortion in case of an unintended pregnancy, while the rest did not because of religious or moral reasons. Although they did not approve of induced abortion, twenty-four of them had a previous induced abortion history. These women explained this contradiction by "having no economical power to grow up more children".

Fifty-eight women (27%) stated that it was possible to prevent an unintended pregnancy after an unprotected intercourse, one hundred and one (47 %) stated that if unprotected intercourse had occurred protection of pregnancy was not possible anyway, and fifty-six (26%) of them did not have any opinion.

**Table 1. Some demographic characteristics and pregnancy histories of study population (N=215) (Umraniye 2005)**

| Characteristics | n | % |
|---|---|---|
| Age (years) | | |
| 18-24 | 34 | 15.8 |
| 25-29 | 71 | 33.0 |
| 30-34 | 58 | 27.0 |
| 35 and over | 52 | 24.2 |
| Education | | |
| Graduated Primary school or less | 152 | 70.0 |
| Graduated Secondary school or higher | 63 | 29.3 |
| Employment | | |
| Not employed | 174 | 80.9 |
| Employed | 41 | 19.1 |
| Used Contraceptive method (current) | | |
| No method used | 28 | 13.0 |
| Withdrawal | 37 | 17.2 |
| Oral contraceptives | 36 | 16.7 |
| Condom | 62 | 28.8 |
| Intrauterine device | 44 | 20.5 |
| Tube ligation | 6 | 2.8 |
| Injectables(Dmpa) | 2 | 0.9 |
| Pregnancy history | | |
| No previous pregnancy | 6 | 2.8 |
| ≥1 Prior pregnancy | 119 | 97.2 |
| Mean number of previous pregnancies | 2.76 | |
| ≥1 Previous abortion | 49 | 22.8 |
| ≥1 Previous unintended pregnancy | 85 | 39.5 |

Women were asked what they would do in case of an unprotected sex or method failure to prevent a possible pregnancy. This question was not asked to women who stated that they want more children and therefore are not using any contraceptive methods (6 women) and women with tubal ligation (6 women). In case of an unprotected sex or method failure more than half (52.2%) stated that "they would have done nothing apart from waiting for the next menstruation with hope", 40.4% of them stated "they would have gone to the primary health center"; while 7.4% of them stated "they would have taken a shower with hot water or vaginal douche to prevent a possible pregnancy". All of no contraceptive users and most of the withdrawal users (67.6%) stated that they would have done nothing apart from waiting for the next menstruation. Most of the current condom users stated that would go to the

**Table 2. Current used contraception and women's behaviour in a possible unprotected sexual intercourse (Umraniye 2005)**

| In case of an unprotected sex or method failure, she would | Current Used contraceptive | | | | |
|---|---|---|---|---|---|
| | None (n=22) (%) | Withdrawal (n=37) (%) | Condom (n=62) (%) | Other modern methods (n=82) (%) | Total (n=203) (%) |
| _ Wait for the next menstruation | 100.0 | 67.6 | 27.4 | 51.2 | 52.2 |
| _ Go to the primary health center | - | 8.1 | 62.9 | 48.8 | 40.4 |
| _ Take a shower with hot water or vaginal douche | - | 24.3 | 9.7 | - | 7.4 |

primary health center (62.9%). More than half of the women who currently use modern contraceptive methods other than condom stated that they would do nothing, while 48.8% of them stated that they would go to the primary health care center. Only withdrawal users and current condom users stated that they would have taken a shower with hot water or vaginal douche (Table 2).

**Table 3. Knowledge, use and willingness to use emergency contraception (n=215)**

| | Yes | |
|---|---|---|
| | n | % |
| Have heard of EC | 57 | 26.5 |
| Have heard EC and knows the correct meaning of EC | 29 | 13.5 |
| Ever used EC | 1 | 0.04 |
| Would use EC after knowing about it* | 105 | 50.2 |

* n=119 women ( 6 women with tube ligation were excluded)

Among all participants only fifty-seven (26.5%; 95% CI 21% to 32%) women had ever heard of EC or the synonyms (morning-after pill or postcoital contraception) used for EC. Of the fifty-seven who had heard of EC, only twenty-nine (50.8%) knew the correct meaning of EC as "*a method used for preventing pregnancy after an unprotected intercourse*". The other entire half, except one woman, stated that although they had ever heard the term EC, they did not know what it was. One woman stated EC as an abortificient. Most known term among women who reported that they had ever heard of EC was "*morning-after pills*" (87.7%). Previous emergency contraceptive use was reported only by one woman (Table 3).

A greater proportion of women educated at least at the secondary school had heard EC compared to women educated in primary school or less (46.0% and 18.4% respectively; x2=17,42 sd= 1, p<0.05) (Data was not shown). There was no statistical association between ever hearing about EC according to age, working status, type of current contraceptive method used, previous unintended pregnancy experience, number of previous pregnancies and previous induced abortion experience (p>0.05).

Among all women only twenty-five stated oral contraceptives as EC method (11.6 %), but only ten out of 25 knew its correct timing for use. IUD was stated only by three women out of all (1.4%) as an EC method and none of them knew the correct timing for IUD insertion after unprotected intercourse (Data was not shown).

Among women who have heard about EC (n= 57) regardless of age, educational level, working status, used contraceptive method and previous induced abortion experience, the commonest cited source of information was pharmacies (47.4%) primary health care centers (21.1%), friends (15.8%) and television or magazines (12.3%). Knowing the correct meaning of EC revealed significant association with women's education and source of information. Women with secondary school or higher education knew the correct meaning of EC more than the women with less education (65.5% and 35.7% respectively, p< 0.05). Ninety-two percent (11 out 12) of the women who stated primary health care center as the source of knowledge knew the correct meaning of EC, while this ratio was lower among women who had got the information from other sources (p<0.05) (Table 4). But detailed knowledge such as types and timing of EC did not differ according to source of information (p>0.05) (Data was not shown).

**Table 4: The distribution of knowing correct meaning of EC according to education of women and source of knowledge on EC (Umraniye, 2005)**

| | Knows correct meaning of EC (n=29) | Statistical Test |
|---|---|---|
| | (%) | |
| Education of woman | | |
| • Primary school or less | 35.7 | $x^2$=5.063 |
| • Secondary school or higher | 65.5 | p=0.035 |
| Source of knowledge about EC | | |
| • Primary health care center | 91.7 | $x^2$=15.469 |
| • Pharmacy | 25.9 | p=0.000 |
| • Others* | 61.1 | |

* friends, television or newspaper

In the analyses of willingness to use EC in the future, six participants who have had tube ligation were excluded. One hundred and five (50.2%) stated they would use EC after getting information about it. Willingness of EC in the future was significantly higher among women educated in at least secondary school, being at least 35 years old, have been employed and having had previous induced abortion. The none-contraceptive users and withdrawal users were more willing (%60.7 and % 62.2% respectively) to use EC in the future than the modern method users (45.1%). For statistical analysis no contraceptive users and withdrawal users are accepted as 'non-effective contraception users' and modern method users are accepted as 'effective contraception users' and the difference between these two groups was statistically significant (p<0.05) (Table 5).

## Discussion

Most of the study population (198 women) stated that they did not want more children in the future. More than half of these women (58.1%) were under the risk of pregnancy because of their choice of contraceptive method (not using a method, using withdrawal or using condom inconsistently). When used correctly and consistently, the male latex condom is an effective contraceptive; the estimated perfect-use pregnancy rate is 3%[12]. However, condom breakage and slippage can occur during typical use. Condom breakage rates vary widely from less than 1% to as high as 13%. Slippage occurs with similar frequency[13-15].

These women can be considered as the potential users for EC. However nearly half of the participants stated that it was not possible to be protected from pregnancy in case of an unprotected intercourse and one fourth did not know about the possibility of a protection in such condition. Additionally, in our study the attitudes of 60% of women towards an unprotected sexual intercourse (doing nothing, waiting until next menstruation with hope) indicated that most of the women were unaware of control of their own reproductivity in emergency cases and might feel themselves inevitable in such

**Table 5. Factors associated with willingness to use EC in the future (Umraniye 2005)**

| Risk factors | Willingness to use EC (%) | OR | 95%CI | Statistical test |
|---|---|---|---|---|
| Age group | | | | |
| <35 years | 45.3 | 2.41 | 1.22-4.74 | $x^2$=6.72 |
| 35 years and older | 66.7 | | | p=0.013 |
| Education | | | | |
| Primary school or less | 41.9 | 3.31 | 1.74-6.28 | $x^2$=14.13 |
| Secondary school or higher | 70.5 | | | p=0.000 |
| Employment status | | | | |
| Not employed | 45.0 | 3.22 | 1.51-6.88 | $x^2$=9.80 |
| Employed | 72.5 | | | p=0.003 |
| Previous abortion | | | | |
| No previous abortion | 42.2 | 4.60 | 2.19-9.66 | $x^2$=17.96 |
| ≥1 Previous abortion | 77.1 | | | p=0.029 |
| Current Used contraception | | | | |
| 'non-effective' | 61.5 | 0.514 | 0.283-0.93 | $x^2$=4.81 |
| 'effective' | 45.1 | | | p=0.36 |

conditions. Studies from developed countries reported similar findings. A study conducted in California with 6209 women reported that 37% of women believed that there is nothing to do for protection from pregnancy after an unprotected intercourse and 11.6% stated that they did not know if anything could be done[16]. Another study conducted in Atlanta with 158 women reported that one third of the women thought that there was nothing to be done after an unprotected intercourse to prevent pregnancy[17].

It was expected that women using barrier methods of contraception would be more familiar with EC and would be better informed than those using other methods. But in our study, currently used contraceptive method was not related to whether women had heard of emergency contraception.

Women who state that they would go to the primary health center if they experience *an unprotected sex or method failure and think she might become pregnant* were mostly current effective contraceptive method users. We explain this situation with the behaviours of the service providers during family planning counselling. In practice, the service providers, especially during condom counselling, tell the applicants "*if you experience condom breackage, do not worry much and come back to us as soon as possible*".

The findings above suggest that family planning service providers in these study units may have insufficient knowledge about EC and/or do not inform the women attending these health centers, about EC as a routine task. This picture is supported both by the low number of respondents who had heard about emergency contraception from health professionals in primary health care centers and by the very low proportion of respondents who knew the correct time limit for its use, even among those who had heard EC from primary health care centers. As we mentioned before the guide used in family planning clinics does not contain information about EC. It is reported that less than one third of the service providers are talking about EC during the family planning counsellings[18]. Although we did not investigate the EC knowledge of the service providers in our study, the other studies conducted with service providers report that service providers knowledge about EC in not sufficient. In a study conducted in eighty family planning units of primary-health-care centers in Istanbul with 180 family planning providers, it is reported that 84% of the providers had heard of EC, but the correct timing and dose interval of EC were known by 50% of them. Furthermore the same study reports that 39.4% of the providers believe that EC is an abortificient, and have some prejudices such as the possibility of increased unprotected sexual intercourse (78.9%) and a tendency for men to give up condom use (75%)[19]. Mandiracioglu et al.[20] reported that only 53.7% of 90 primary health care providers had heard of emergency contraception; Zeteroglu et al.[21] reported the accurate knowledge rate about EC as 38.5% among 214 health-care providers at an university hospital. In the light of these reports we may think that providers' insufficient knowledge about EC may be a reason for insufficient knowledge of the women attending to these clinics.

Awareness to EC was low among the study population. Only half of the women who had ever heard of EC knew that EC was a method that was used after an unprotected intercourse to prevent pregnancy. The ratio of women who ever heard of EC to women knowing what it was calculated as nearly 50% and was similar to other studies. Jackson et al.[22] reported that 36% of the population had heard of EC and 19% of those could name a method for EC. Chuang et al.[23] reported that 82% of women had heard of EC and 39% of those women knew that EC works by preventing pregnancy while George J et al.[24] reported that 78.6% of women had heard of EC and 64% of respondents who had heard of EC knew that it could be used after unexpected sex. Studies from Turkey also supported that awareness to EC is insufficient among women. Ozturk et al.[25] reported that the rate of knowledge about EC was 4.7%. Sogukpinar et al.[26] reported that only 3.3 % of women knew the EC as a method used to prevent pregnancy after an unprotected intercourse while Gungor et al. reported that 53.9% of respondents did not know anything about EC[27]. We found that ever hearing EC was increasing by educational level of women. Association between education of women and awareness with EC was similar to the other studies. However, more than half of women with at least a secondary school education had never heard of EC.

Although 39.5% of the participants had experienced at least one unintended pregnancy, only one woman reported previous use of any EC method (0.01%). The use of any EC method in Turkey is reported as 0.6% in Turkish National Demographic Health Survey-2003, 0.7% by Ozturk et al.[25] and 10.6%

by Gungor et al.[27] Using a regular contraceptive method is the first step in avoiding unintended pregnancies and counselling about regular contraceptive methods should be the primary task of service providers. However, even women using contraceptive method might be under risk of an unintended pregnancy due to contraceptive failure or misuse of the contraceptive method. All women have the right to control their own reproductivity and EC can be considered as an effective method that helps women to use her right to control her reproductivity after an unprotected intercourse or contraceptive method failure to reduce the risk of an unintended pregnancy. However, women need to know about EC and should be willing to use EC before it can be effective. In this study half of the study population stated that they may use EC in the future. But on the other side half of the study population stated that they could not use EC in the future even after being informed about EC. These women were mostly less educated, not working, had no previous experience of induced abortion and were using modern contraceptive method. This may show that there may be attitudes that limit the willingness to use EC especially among women. It is reported that women experiencing induced abortions undergo a sense of guilt, anger, committing a sin, or similar feelings[5]. The possibility of repetition of such negative feelings may be the reason for being more willing to use EC of women with previous induced abortion experience than the women who did not experience induced abortion previously. Women who use currently modern contraceptive methods were less willing to use EC than the none-contraceptive users and withdrawal users. The reason for this may be their trust to the method they currently use. The reason of unwillingness to use EC in the future even after knowing it needs to be investigated more in details.

The most cited source of information about EC was pharmacies in this study. This may be an indicator of importance of the role of advertising posters and brochures about EC pills, putted up in pharmacies, for familiarity with EC. But being familiar with EC is not enough –although essential- and should be supported with detailed counselling. According to Turkish DHS-2003 condom users get their condoms from pharmacies (58.8%) and from primary health care centers (29.6%) mostly. We think that condom or other barrier method users are the ones most at risk of method failure among modern method users and EC treatment. Therefore EC counselling can be given to people attending to pharmacies for buying condom, or an informational handout can be put into the condom packages at the manifacturing stage. This will help to arise awareness and thereby willingness to use EC at least among condom users.

Whether or not respondents had heard of EC was not associated with her previous abortion experience and none of the women stated that they had heard about EC from a clinician during abortion intervention.This result may be due to women are not informed about EC and contraception in the abortion clinics. It is important to educate women about the risk of an unplanned pregnancy occurring. Emergency contraception counseling should be a routine part of the service in abortion clinics as well as in reproductive health services.

In conclusion, majority of the women attending three health centers were not aware of EC and yet half of them including those who first learned about EC during this study, stated a willingness to use EC in the future if the need arose. A short explanation about EC during the study made by the researchers increased their familiarity with EC concept and created wilingness to use it. Service providers should ask the contraception method used by the women attending for any reason to the clinic, and family planning counselling including EC should be given to every woman as a routine task. By this way women attending to a clinic can be informed about EC concept.

Although the sampling framework that does not include a representative group of women from the community, we believe the results can highlight the service providers especially working in primary health care clinics.

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# Cholinesterase levels in seasonal farm workers from Adana

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## Abstract

Organo-phosphorous (OP) pesticides increase cholinergic stimulus by inhibiting the cholin-esterase (ChE) enzyme and the characteristic clinical symptoms are observed. This study was aimed to investigate the effect of OP pesticides on plasma choline esterase (PChE) enzyme in farm workers. This descriptive study comprised a total of 120 people, consisting of 60 male seasonal farm workers with a mean age of 30.1±13.4 (min:14, max:68) compared to 60 non-farm worker participants with a mean age of 34.5±10.8 (min:20, max:64) (p>0.05). The PChE level was found to be 7315.3±1985.1 U/l in farm workers group and 8994.6±1797.4 U/l in non-farm workers group (p=0.000). The levels of PChE were found below normal value in 16 (26.6%) of farm workers and in 4 (6.6%) of non-farm-workers (p=0.003). No relation between seasonal or yearly working times and PChE levels was observed (p>0.05). Low PChE levels in farm workers were related to decreased regeneration of cholinesterase due to continuous inhalation of OP pesticides.

Key words: Farm-workers, organo-phosphorous pesticides, cholinesterase

## Introduction

Pesticides are widely used for agricultural production in the world with an approximate amount of 3 million tons per year. Organo-phosphorous (OP) pesticides constitute the predominant fraction[1]. The pesticide consumption per year in Turkey reaches an approximate of 13 thousand tons. More than 2/3 of this consumption occurs in Aegean and Mediterranean regions. Pesticide consumption per hectare in Turkey (0.6 kg) is lower than that in the European Community countries. But the toxicity of pesticides used in Turkey is higher and negative effects are observed not only on target organisms, but on the environment and other living beings[2-4]. These agents produce clinical symptoms by inhibiting the cholin-esterase (ChE) enzyme. The exposure routes to pesticides are mainly respiratory tract and skin, the latter being more prone in high temperatures by increased sweating or in humid ambient[5-8]. Clinical symptoms in acute OP intoxication are increased secretion, sweating, headache, blurred vision, myosis, bronco-constriction, muscle cramps, fasciculations, diarrhea, abdominal pain, aritmia, cardiac arrest, nervous or respiratory systems depressions[9-12]. Long-term exposure to ChE inhibiting pesticides may cause several types of cancer, teratogenic effects, sterility, spontaneous abortus or cognitive deficits[13,14]. An approximate amount of 5 000 tons of pesticides are yearly used on 675 000 hectares wide Cukurova region. The region receives nearly 250 thousands of workers in spring and summer, who reside in the area for nearly 6-8 months every year for watery farming activities. The humid and hot summer characteristics of Cukurova Region increase the absorption of pesticides by dermal route. The farm-workers live in tents with inappropriate environmental conditions and are exposed to pesticide effects in both the farming fields and their accommodations. Pesticide spraying from planes causes dispersing of these chemicals to large areas. Unwillingness to use protective masks by farm-workers due to low level of education emphasizes the effect of the pesticides. Distance of inhabitations

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to health institutions impedes the reach to health service. The Turkish Workers' Health and Work Safety Regulations Code requires the determination of ChE enzyme level of people working at places at risk every six months and work change when a 25% of decrease in enzyme levels is observed[15]. As periodic examination of farm workers is limited in Turkey, early diagnosis and treatment are not always possible, so pesticide exposed cases are generally presented as acute poisoning. So far no study has been performed in Turkey to determine the ChE levels in farm workers. The studies performed have involved mostly OP pesticide poisoning cases applying to Emergency Units. Hence we have not been able to discuss the results of our study with similar studies. This study is aimed to investigate the effect of OP pesticides in the breathed air on ChE levels in seasonal farm workers.

## Materials and methods

This descriptive study was performed in October 2005, in Cukurova Region, Adana. The study group consisted of 120 men, among whom 60 were selected by non-random sampling method. These farm-workers were people who had arrived to Cukurova Region in the previous years. In order to investigate the effect of long-term pesticide exposure, the study was performed at the end of the farming season, just before the departure of seasonal farm workers to their home locations. The farm workers themselves did not perform pesticide spraying; hence the exposure routes to pesticides were by inhalation or skin absorption in farm fields or inhabitation areas. Other 60 men (non farm-workers) were selected among cleaners working at the Faculty of Medicine Hospital in Cukurova University, living in city center, not engaged in agriculture and thought not to be exposed to pesticides. The farm workers, selected by non-random sampling method, were applied a questionnaire inquiring demographic characteristics, habits, time of inhabitation and history of frequenting the area. The dependent variable was PChE enzyme level; inhabitation time, working years, Body Mass Index (BMI), smoking status were independent variables. The blood samples taken from sampling group were centrifuged and transferred to the laboratory under appropriate cooling conditions. Plasma ChE level was measured by enzymatic [S-butyril-thiocholine-iodide] method, with normal range between 6400 and 15500 Units/liter. Statistical analyses were performed by SPSS 10.0 computer program. Continuous variables like age, PChE, working time, BMI were tested by Student's t-test. Categorical values were tested by chi-square test. Data were presented as mean±SD and percent (%). Significance level was accepted as $p<0.05$.

## Results

The mean age of farm-workers was found as 30.1±13.4 (min.14 and max.68), while that of the non-farm-workers as 34.5±10.8 (min.20, max.64) ($p>0.05$).

**Table. 1 Demographical characteristics and pChE levels in the study groups**

| | Farm Workers Group | Non Farm Workers Group |
|---|---|---|
| Participants number | n=60 | n=60 |
| Mean age±SD. | 30.1±13.4 | 34.5±10.8 |
| Mean working time±SD. | 13.9±10.2 | N/A |
| Mean inhabitation time±SD. | 8.1±2.6 months | N/A |
| Mean working time (this season)±SD. | 8.1±6.5 months | N/A |
| Smoker participants number | 44 | 38 |
| Mean body mass index±SD. | 23.7±3.6 | 26.8±4.0 |
| PChE±SD | 7315.3±1985.1 U/l | 8994.6±1797.4 U/l |

SD=Standard Deviation
N/A=Not Applicable

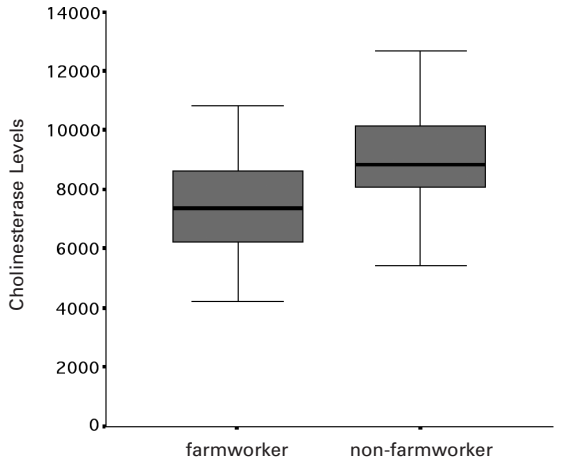
The mean body mass index (BMI) values of the workers were found significantly lower compared to the non-farm-workers group ($p=0.000$). No correlation was found between BMI and PChE levels ($r=0.163$, $p=0.213$).

The mean PChE levels were not significantly different between workers who worked for 2 months or longer than 2 months (7216±1961.6 U/l) in the latest season and those who worked shorter than 2 months (8205.8±2157.8 U/l) ($p>0.05$).

Similarly the mean pChE levels were not significantly different between workers with a life-long working history of 5 years or longer (7239.7±2196.3 U/l) and those with one shorter than 5 years (7523.2±1268.8 U/l) ($p>0.05$).

At the time of the study 44 (73.4%) of farm workers and 38 (63.6%) of non-farm-workers reported to be smoking. But the mean pChE levels between

**Figure 1: Cholinesterase levels in the farm-workers group and the control group**




smoking workers (7247.4±1609.6 U/l) were found to be lower than non-smokers (7364.0±2270.6 U/l) (p>0.05).

The mean pChE levels were found to be significantly lower in the farm workers group (7315.3± 1985.1 U/l) than those in the non-farm-workers group (8994.6±1797.4 U/l) (p=0.000).

The pChE levels were found lower than the normal range in 16 (26.6%) of the farm workers, and in 4 (6.6%) of the non-farm-workers (p=0.003).

## Discussion

The lower BMI in the workers group compared to non-farm-workers may be related to heavier working conditions and nutritional deficits. There is a study reporting the correlation between BMI and pChE levels[16]. The absence of difference in our study could be related to the fact that OP pesticides do not get deposited in the fatty tissues[17].

Many studies found PChE levels lower in the farm workers group than in the controls[18-21]. We similarly found lower PChE levels in farm workers than in the non-farm workers group. Lower PChE levels found in our study could be related to the exposure to pesticides by inhalation or dermal route in the farm-field or inhabitation area. Likewise ChE levels were found to significantly decrease in non-farmer fishermen in the agricultural seasons, explainable by inhalation exposure[22].

A higher frequency of sub-normal ChE levels in the farm workers group could be explained by the slowing of the ChE regeneration due to the aging of the enzyme, as a result of continuous exposure to OP pesticides by inhalation and long-term inhibition by OP pesticides[23,24]. As the regeneration seemed to occur as fast as the therapeutic agents like PAM were administered. Absence of periodic controls in farm workers in this study impedes the possibility of early diagnosis and treatment, slowing the regeneration of the enzyme.

There are studies reporting the correlation between working time and ChE levels[25,26]. The absence of such a relationship in our study could be explained by the fact that those farm workers were not sprayers and the concentration of the pesticides in the air was low, hence the decrease in the ChE levels was slight.

ChE inhibition increases due to increased absorption in smoking pesticide sprayers[25]. But the absence of this relationship in our study could be explained by the lower concentration of the pesticides in the air inhaled and by the number of the cigarettes smoked.

Clinical findings are observed in case of 50-90% of acetyl-choline-esterase inhibition at cholinergic synapses. Toxic findings are observed when the enzyme levels are below 30%. Legal rules require the measurement of enzyme levels every 6 months in people working in places affecting ChE enzyme and the change of work in case of a decrease of 25% (15). This is required for the early diagnosis and treatment, as the progress can be prevented by controlling the enzyme levels before the appearance of clinical findings. It is thought that periodical controls of these workers are blocked by the absence of social security among them. As the social security obliges its members to regularly perform periodical examinations, this increases the chance of early diagnosis and treatment and preventing unnecessary indemnities.

## Limitation of the Study

The limitations of the study are the sampling of the study group by non-random sampling, insufficient number of participants, inability to represent the farm workers, unavailability of previous ChE levels of farm workers, non-farm workers group consisting of only cleaners. The dependence to laboratory and financial problems resulted in a limitation of the number of participants in the study group. Another limitation could be indicated as the absence of PChE measurements at the start of the season in order to investigate the effects in a whole working season.

## Conclusion

PChE inhibition in non-sprayer farm workers was found to be higher compared to the group consisting of people working as cleaners and living at the city center. This situation could be related to a higher concentration of OP pesticides used in farm fields than in the city center. It is thought that inhabitation of farm workers in places with high pesticide concentration, for 8 months per year in average, and frequenting the area for an average of 14 years, inhibit the ChE and slow down the regeneration of the enzyme.

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# The European Charter on counteracting obesity, 2006

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In 16 November 2006, at the WHO European Ministerial Conference on Counteracting Obesity, in Istanbul, Turkey, Dr Marc Danzon, WHO Regional Director for Europe, and Dr. Recep Akdag, Minister of Health- Turkey, signed a historic charter on behalf of all of the Member States in the WHO European region.

The Charter sets the ultimate goal of curbing the epidemic and reversing the current trend in the region. The Charter declares: "Visible progress, especially relating to children and adolescents, should be achievable in most countries in the next 4-5 years and it should be possible to reverse the trend by 2015 at the latest" (App I).

For the first time ever, ministers of health and senior policymakers from other relevant ministries, from 53 countries in the WHO European region, was gathered to agree on a strategy for action and adopt a European Charter on Counteracting Obesity.

The Conference was organized by the WHO Regional Office for Europe and hosted by the Ministry of Health of Turkey. The European Commission is the principal international partner. Other organizations such as the Food and Agriculture Organization of the United Nations (FAO), the United Nations Children's Fund (UNICEF), the International Labour Organization (ILO), the Council of Europe, the World Bank and other international and regional agencies, as well as nongovernmental organizations, have taken part in the Conference.

The Conference aimed to place the problem high on public health and political agendas, in order to foster greater awareness and high-level political commitment to action and to promote international and intersectoral partnerships. The Conference was expected to result in Member States adopting a European charter on counteracting obesity, which will serve as political guidance for strengthening action on obesity in the region.

Obesity is the condition of excessive fat in the body, and has significant health consequences. It is the result of undesirable weight gain caused when people consume more energy than they expend. Obese people store more fat in the abdomen, which is associated with an increased risk of developing certain diseases.

Obesity and its related diseases are more prevalent among groups with low socioeconomic status. Those on lower incomes tend to consume more meat, fat and sugar, and those on higher incomes, more fruit and vegetables. In addition, poorer groups usually have less access to sports and fitness facilities, which limits the exercise they take.

Obesity in childhood often continues into adulthood. It brings an enormous burden of both disability and mortality, as well as an economic challenge.

Calculating a person's body mass index (BMI) is the most common method of measuring overweight and obesity in adults. A healthy lifestyle is essential in counteracting obesity.

## Obesity in European region

Obesity in Europe has reached epidemic proportions. Its prevalence has tripled in the last two decades, and if no action is taken there will be an estimated 150 million obese adults (20% of the population) and 15 million obese children and adolescents

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(10% of the population) in the WHO European region by 2010. Today, between 30% and 80% of adults are overweight in most countries.

Currently available measured data indicate a range in overweight levels in the region from, for example, 28% of men in Uzbekistan to 66% of men in Ireland. For obesity, levels based on measured data range from 13% of adults in Portugal to 23% of adults in Finland. Significant differences exist between and within countries, but also between regions, social groups, men and women, and age groups. However, rates are rising in virtually all parts of the region.

Children are particularly in danger of obesity. Being overweight is the most common childhood disorder in the European region. Currently about 20% of children are overweight, and of these a third are obese. One in 10 children will be obese by 2010. These children are at much a greater risk of developing type 2 diabetes, suffering from hypertension and having difficulty sleeping, as well as developing psychosocial problems. Perhaps most worryingly, they are very likely to remain obese in adulthood and develop more serious diseases, with the result that the length and quality of their lives will be reduced.

In most countries of the region, obesity is more common among socially deprived communities, characterized by lower income, education and access to care. It has been suggested that obesity reflects and compounds inequalities, and this becomes a vicious circle. Individuals, particularly those in disadvantaged situations, face structural, social, organizational, financial and other constraints in making healthy choices concerning their diet and physical activity. At national level, studies indicate that poorer countries that are developing fast, experience a rapid increase in obesity, while wealthier countries with the greatest differences in the income between rich and poor tend to have the highest levels of the disease.

Obesity is the result of undesirable weight gain, caused when people eat more than they burn off through physical activity. Obese people have an increased risk of developing many serious medical conditions such as non-insulin-dependent (type 2) diabetes, coronary heart disease, hypertension and stroke, gallbladder disease, certain types of cancer (endometrial, ovarian, breast, cervical, prostate, colorectal, gallbladder, pancreatic, hepatic and renal) and psychosocial problems. Overweight causes one million deaths in the European region every year.

The cost to society of obesity is enormous. Up to 6% of health costs in the WHO European region are due to obesity in adults. In Spain, for example, the total cost attributable to obesity is estimated to be € 2.5 billion per year. Figures from the United States indicate that annual health care costs are 36% higher for those who are obese compared to those who have a healthy BMI.

The causes behind the obesity epidemic are complex. The structure of modern society and social and economic policies and development (with more people living in towns and cities, travelling by car, sitting in front of a computer at work, buying more processed foods and drinks, and so on) has been described as an "obesogenic environment", encouraging behaviour that increases the risk of obesity.

People's eating habits have changed significantly in recent decades. Globally, the amount of food available has risen over time. In Europe today, people are not eating enough fruit and vegetables too. A recent WHO survey in the European region indicated that only 30% of boys and 37% of girls aged 13–15 years ate fruit every day.

In Western Europe, at least two thirds of adults are not sufficiently physically active. WHO recommends that adults undertake at least 30 minutes of moderate physical activity per day. Children should undertake at least 60 minutes of varied physical activity every day. The environment in which people live – at home, at school, at work, travelling, and so on –often discourages them from being physically active.

Strategies to curb the epidemic should encourage both healthy eating, through reducing the consumption of fat and sugar and raising the amount of fruit and vegetables people eat, and increasing levels of physical activity. Healthy food options should be made cheaper and more available in shops, workplaces and school canteens. Energy-dense foods and drinks should not be promoted, made less widely available, and replaced by new products of a better nutritional quality. Opportunities for physical activity in everyday life, such as through active transport, should be made available and accessible to the whole population through school and workplace programmes.

It is vital that this action involves all sections of society and is supported from the local community

level, through governments, up to the international arena. Changing people's behaviour requires the active participation of private business from food producers to supermarkets, government sectors (including trade, agriculture, health, transport, labour, urban planning, education and sport) and local government and communities themselves. The media is highly influential in promoting a healthy lifestyle.

WHO supports countries' efforts to address the problem of obesity. In 2004, Member States adopted the Global Strategy on Diet, Physical Activity and Health, which aims to improve public health through healthy eating and physical activity.

## Reference

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# Appendix I

## European Charter On Counteracting Obesity

To address the growing challenge posed by the epidemic of obesity to health, economies and development, we, the Ministers and delegates attending the WHO European Ministerial Conference on Counteracting Obesity (Istanbul, Turkey, 15–17 November 2006), in the presence of the European Commissioner for Health and Consumer Protection, hereby adopt, as a matter of policy, the following European Charter on Counteracting Obesity. The process of developing the present Charter has involved different government sectors, international organizations, experts, civil society and the private sector through dialogue and consultations.

We declare our commitment to strengthen action on counteracting obesity in line with this Charter and to place this issue high on the political agenda of our governments. We also call on all partners and stakeholders to take stronger action against obesity and we recognize the leadership on this issue being provided by the WHO Regional Office for Europe.

Sufficient evidence exists for immediate action; at the same time, the search for innovation, adjustments to local circumstances and new research on certain aspects can improve the effectiveness of policies.

Obesity is a global public health problem; we acknowledge the role that European action can play in setting an example and thereby mobilizing global efforts.

## 1. THE CHALLENGE

## We acknowledge that

1.1 **The epidemic of obesity poses one of the most serious public health challenges in the WHO European Region.** The prevalence of obesity has risen up to three-fold in the last two decades. Half of all adults and one in five children in the WHO European Region are overweight. Of these, one third are already obese, and numbers are increasing fast. Overweight and obesity contribute to a large proportion of noncommunicable diseases, shortening life expectancy and adversely affecting the quality of life. More than one million deaths in the Region annually are due to diseases related to excess body weight.

1.2 **The trend is particularly alarming in children and adolescents**, thus passing the epidemic into adulthood and creating a growing health burden for the next generation. The annual rate of increase in the prevalence of childhood obesity has been rising steadily and is currently up to ten times higher than it was in 1970.

1.3 **Obesity also strongly affects economic and social development.** Adult obesity and overweight are responsible for up to 6% of health care expenditure in the European Region; in addition, they impose indirect costs (due to the loss of lives, productivity and related income) that are at least two times higher. Overweight and obesity most affect people in lower socioeconomic groups, and this in turn contributes to a widening of health and other inequalities.

1.4 **The epidemic has built up in recent decades as a result of the changing social, economic, cultural and physical environment.** An energy imbalance in the population has been triggered by a dramatic reduction of physical activity and changing dietary patterns, including increased consumption of energy-dense nutrient-poor food and beverages (containing high proportions of saturated as well as total fat, salt, and sugars) in combination with insufficient consumption of fruit and vegetables. According to available data two thirds of the adult population in most countries in the WHO European Region are not physically active enough to secure and maintain health gains, and only in a few countries does the consumption of fruit and vegetables achieve the recommended levels. Genetic predisposition alone can not explain the epidemic of obesity without such changes in the social, economic, cultural and physical environment.

1.5 **International action is essential to support national policies.** Obesity is no longer a syndrome of wealthy societies; it is becoming just as dominant in developing countries and countries with economies in transition, particularly in the context of globalization. Taking intersectoral action remains a challenge, and no country

has yet effectively managed to bring the epidemic under control. Establishing strong internationally coordinated action to counteract obesity is both a challenge and an opportunity, as many key measures are cross-border both in character and in their implications.

## 2. WHAT CAN BE DONE: the goals, principles and framework for action

2.1 **The obesity epidemic is reversible.** It is possible to reverse the trend and bring the epidemic under control. This can only be done by comprehensive action, since the root of the problem lies in the rapidly changing social, economic and environmental determinants of people's lifestyles. The vision is to shape societies where healthy lifestyles related to diet and physical activity are the norm, where health goals are aligned with those related to the economy, society and culture and where healthy choices are made more accessible and easy for individuals.

2.2 **Curbing the epidemic and reversing the trend is the ultimate goal of action in the Region.** Visible progress, especially relating to children and adolescents, should be achievable in most countries in the next 4–5 years and it should be possible to reverse the trend by 2015 at the latest.

2.3 **The following principles need to guide action in the WHO European Region:**

2.3.1 High-level political will and leadership and whole-government commitment are required to achieve mobilization and synergies across different sectors.

2.3.2 Action against obesity should be linked to overall strategies to address noncommunicable diseases and health promotion activities, as well as to the broader context of sustainable development. Improved diet and physical activity will have a substantial and often rapid impact on public health, beyond the benefits related to reducing overweight and obesity.

2.3.3 A balance must be struck between the responsibility of individuals and that of government and society. Holding individuals alone accountable for their obesity should not be acceptable.

2.3.4 It is essential to set the action taken within the cultural context of each country or region and to acknowledge the pleasure afforded by a healthy diet and physical activity.

2.3.5 It will be essential to build partnerships between all stakeholders such as government, civil society, the private sector, professional networks, the media and international organizations, across all levels (national, sub-national and local).

2.3.6 Policy measures should be coordinated in the different parts of the Region, in particular to avoid shifting the market pressure for energy-dense food and beverages to countries with less regulated environments. WHO can play a role in facilitating and supporting intergovernmental coordination.

2.3.7 Special attention needs to be focused on vulnerable groups such as children and adolescents, whose inexperience or credulity should not be exploited by commercial activities.

2.3.8 It is also a high priority to support lower socioeconomic population groups, who face more constraints and limitations on making healthy choices. Increasing the access to and affordability of healthy choices should therefore be a key objective.

2.3.9 Impact on public health objectives should have priority consideration when developing economic policy, as well as policies in the areas of trade, agriculture, transport and urban planning.

2.4 **A framework, linking the main actors, policy tools and settings, is needed to translate these principles into action.**

2.4.1 **All relevant government sectors and levels should play a role**. Appropriate institutional mechanisms need to be in place to enable this collaboration.

– Health ministries should play a leading role by advocating, inspiring and guiding multisectoral action. They should set the example when facilitating healthy choices among employees in the health sector and health service users. The role of the health system is also important when dealing with people at high risk

and those already overweight and obese, by designing and promoting prevention measures and by providing diagnosis, screening and treatment.

– All relevant ministries and agencies such as those for agriculture, food, finance, trade and economy, consumer affairs, development, transport, urban planning, education and research, social welfare, labour, sport, culture, and tourism have an essential role to play in developing health promoting policies and actions. This will also lead to benefits in their own domain.
– Local authorities have great potential and a major role to play in creating the environment and opportunities for physical activity, active living and a healthy diet, and they should be supported in doing this.

2.4.2 **Civil society can support the policy response.** The active involvement of civil society is important, to foster the public's awareness and demand for action and as a source of innovative approaches. Nongovernmental organizations can support strategies to counteract obesity. Employers', consumers', parents', youth, sport and other associations and trade unions can each play a specific role. Health professionals' organizations should ensure that their members are fully engaged in preventive action.

2.4.3 **The private sector should play an important role and have responsibility in building a healthier environment, as well as for promoting healthy choices in their own workplace.** This includes enterprises in the entire food chain from primary producers to retailers. Action should be focused on the main domain of their activities, such as manufacturing, marketing and product information, while consumer education could also play a role, within the framework set by public health policy. There is also an important role for sectors such as sports clubs, leisure and construction companies, advertisers, public transportation, active tourism, etc. The private sector could be involved in win-win solutions by highlighting the economic opportunities of investing in healthier options.

2.4.4 **The media have an important responsibility** to provide information and education, raise awareness and support public health policies in this area.

2.4.5 **Intersectoral collaboration is essential not only at national but also at international level.** WHO should inspire, coordinate and lead the international action. International organizations such as the United Nations Food and Agriculture Organization (FAO), the United Nations Children's Fund (UNICEF), the World Bank, the Council of Europe, the International Labour Organization (ILO), and the Organisation for Economic Cooperation and Development (OECD) can create effective partnerships and thus stimulate multisectoral collaboration at national and international levels. The European Union (EU) has a principal role to play through EU legislation, public health policy and programmes, research and activities such as the European Platform for Action on Diet, Physical Activity and Health.

Existing international commitments such as the Global Strategy on Diet, Physical Activity and Health, the European Food and Nutrition Action Plan and the European Strategy for the Prevention and Control of Noncommunicable Diseases should be used for guidance and to create synergies. In addition, policy commitments such as the Children's Environment and Health Action Programme for Europe (CEHAPE), the Transport, Health and Environment Pan-European Programme (THE PEP), and the Codex Alimentarius within the limits of its remit, can be used to achieve coherence and consistency in international action and to maximize efficient use of resources.

2.4.6 **Policy tools range from legislation to public/private partnerships, with particular importance attached to regulatory measures.** Government and national parliaments should ensure consistency and sustainability through regulatory action, including legislation. Other important tools include policy reformulation, fiscal and public investment policies, health impact assessment, campaigns to raise awareness and provide consumer information, capacity-building and partnership, research, planning and monitoring. Public/private partnerships with a public health rationale and shared specified public health objectives should be encouraged. Specific regulatory measures should include: the adoption of regulations to substantially reduce the extent and impact of commercial promotion of energy-dense foods and beverages, particularly to children, with the development of international approaches, such as a code on marketing to children in this area; and the adoption of regulations for safer roads to promote cycling and walking.

2.4.7 **Action should be taken at both micro and macro levels, and in different settings.** Particular importance is attached to settings such as the home and families, communities, kindergartens, schools, workplaces, means of transport, the urban environment, housing, health and social services, and leisure facilities. Action should also cover the local, country and international levels. Through this, individuals should be supported and encouraged to take responsibility by actively using the possibilities offered.

2.4.8 **Action should be aimed at ensuring an optimal energy balance by stimulating a healthier diet and physical activity.** While information and education will remain important, the focus should shift to a portfolio of interventions designed to change the social, economic and physical environment to favour healthy lifestyles.

2.4.9 **A package of essential preventive actions should be promoted as key measures; countries may further prioritize interventions from this package, depending on their national circumstances and the level of policy development.** The package of essential action would include: reduction of marketing pressure, particularly to children; promotion of breastfeeding; ensuring access to and availability of healthier food, including fruit and vegetables; economic measures that facilitate healthier food choices; offers of affordable recreational/exercise facilities, including support for socially disadvantaged groups; reduction of fat, free (particularly added) sugars and salt in manufactured products; adequate nutrition labelling; promotion of cycling and walking by better urban design and transport policies; creation of opportunities in local environments that motivate people to engage in leisure time physical activity; provision of healthier foods, opportunities for daily physical activity, and nutrition and physical education in schools; facilitating and motivating people to adopt better diets and physical activity in the workplace; developing/improving national food-based dietary guidelines and guidelines for physical activity; and individually adapted health behaviour change.

2.4.10 **Attention should also continue to be focused on preventing obesity in people who are already overweight and thus at high risk, and on treating the disease of obesity.** Specific actions in this area would include: introducing timely identification and management of overweight and obesity in primary care, provision of training for health professionals in the prevention of obesity; and issuing clinical guidance for screening and treatment. Any stigmatization or overvaluation of obese people should be avoided at any age.

2.4.11 **When designing and implementing policies, successful interventions with demonstrated effectiveness need to be used.** These include projects with proven impact on the consumption of healthier foods and levels of physical activity such as: schemes to offer people free fruit at school; affordable pricing for healthier foods; increasing access to healthier foods at workplaces and in areas of socioeconomic deprivation; establishing bicycle priority routes; encouraging children to walk to school; improving street lighting; promoting stair use; and reducing television viewing. There is also evidence that many interventions against obesity, such as school programmes and active transport, are highly cost-effective. The WHO Regional Office for Europe will provide decision-makers with examples of good practice and case studies.

## 3. PROGRESS AND MONITORING

3.1 The present Charter aims to strengthen action against obesity throughout the WHO European Region. It will stimulate and influence national policies, regulatory action including legislation and action plans. A European action plan, covering nutrition and physical activity, will translate the principles and framework provided by the Charter into specific action packages and monitoring mechanisms.

3.2 A process needs to be put together to develop internationally comparable core indicators for inclusion in national health surveillance systems. These data could then be used for advocacy, policy-making and monitoring purposes. This would also allow for regular evaluation and review of policies and actions and for the dissemination of findings to a wide audience.

3.3 Monitoring progress on a long-term basis is essential, as the outcomes in terms of reduced obesity and the related disease burden will take time to manifest themselves. Three-year progress reports should be prepared at the WHO European level, with the first due in 2010.

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Minister of Health of Turkey

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WHO Regional Director for Europe

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