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Contents

From the Editor

You will find five original articles and a "Notes From the Field" in this issue of the TJPH. First article is about revised Conflict Tactics Scales (CTS2) measuring domestic violence among women.

Violence against women is a major health and human rights concern. While violence has severe health consequences for the affected, it is a social problem that requires an immediate coordinated response from multiple sectors. However, data collection efforts that measure the scope and magnitude of the situation of violence against women are hampered by a number of factors. One of the factors for that is the lack of a proper tool to collect an accurate and comparable data on violence against women.

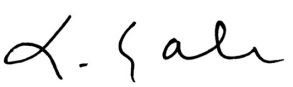
Turhan et al. dealt with this problem and measured the validity and reliability of the revised version of the Conflict Tactics Scales (CTS2). Based on the study results, it seems that Turkish version of the CTS2 is a valid and reliable scale to assess domestic violence against Turkish women. It is now important to use this scale in different and larger samples.

Apart from violence, you will find interesting articles dealing with different issues such as measles immunity, knowledge, attitude and behaviour of the teachers about smoking, effectiveness of a first aid education model, and health status of the street children. There has been a topic on measles in nearly every issue of TJPH as one the important topics on the agenda of Turkey. Street children were also discussed in one of the early issues of the journal from a different point of view. In this issue, you will find information about the health status of the children living and working on the street.

Notes from the fields of this issue stands out as one of the important social and health problems of big cities. Waste picking is an informal sector and has been drawing attention for a long time. However, there is very limited data regarding its health and safety risks on both individual and community level. Torun et. al are presenting a brief Curriculum Vitae of some waste pickers in Istanbul. We believe, reading these notes will lead many researchers to focus on this important topic closely.

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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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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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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UNICEF. State of the World's Children. New York: Oxford University Press, 1998.

Chapter in a book

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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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Validity and reliability of the Turkish version of the revised Conflict Tactics Scales

Ebru TURHAN[a], Asuman GURAKSIN[b], Tacettin INANDI[c]

Abstract

Aim: To evaluate validity and reliability of Conflicts Tactics Scales 2 in Turkish women.
Materials and Methods: The study group consists of 300 married women. Construct validity, content validity and face validity was evoluated in this study. In order to assess reliability of the scale, item-total correlations, internal consistency analysis were used.
Results: Item-total correlations could not be performed for some items because of unique response. A strong correlation was found between womens' behaviours and partners' behaviours ($p<0.01$). With regard to internal consistency, overall Cronbach Alpha value was 0.90 accounting for 0.82 for womens' behaviours, 0.85 partners' behaviours. Construct validity of the scale were evaluated with confirmative factor analysis. The results of the factor analysis were consistent with the original scales.
Conclusions: In order to evaluate domestic violence against women, the Conflict Tactics Scales can be used as a valid and reliable scale in Turkish Women.
Key Words: Domestic violence, validity, reliability, conflict, women.

Introduction

Violence manifests itself as one of the most striking and important problems of modern life throughout most parts of the world. Becoming more and more widespread and being prevalent in all aspects of social life in all races and cultures, violence is defined by the World Health Organization (WHO) as the intentional use of physical force or power, either threatened or actual, against a person that results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation[1].

While violence in the public realm is scrutinized within the frame of human rights concept, domestic violence is seen as a problem in the private realm that needs to be resolved between partners. Therefore, even though women have endured domestic violence for centuries, it has not usually attracted like much attention[2]. In a male-dominated society like ours, a "sexist order" is considered natural by women; women usually submit to domestic violence, tolerate physical force or power. Status of women in various aspects of life is low. These collectively result in domestic violence not being acknowledged or reported as frequently as in other countries, which renders domestic violence a less-known issue[3,4].

Research has shown that women have been subject to violence by their spouses all around the world and this violence is independent of class, ethnic origin or socio-economic status. In recent years, an increase in the incidence of domestic violence has been noted and one in four women suffers from this violence[5,6,7,8]. Domestic violence, which has escalated to significant levels, causes physical and psychological problems, loss of productivity, decreases in the quality of life of the individual or his/her family, deterioration of family unity and family health, and this breakdown in family health reflects onto community health. Furthermore, expenses incurred for

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physical or psychological treatment of individuals suffering from domestic violence have consequences on the economy. Hence, violence comprises an obstacle on the social and economic progress[9]. Owing to this property, domestic violence is a concern, not only for the individual but also for the family and community at large and requires a close collaboration between sectors.

At present there is no valid and reliable scale that allows objective assessment of domestic violence in Turkey. The Revised Conflict Tactics Scales (CTS2) is a widely used scale to determine domestic violence and is developed to detect conflicts during marriage, cohabitation or daily relations[12]. In this study, we examined the validity and reliability of CTS2 in detecting domestic violence in Erzurum.

Materials and Methods

In accordance with the suggestion of "Taking 5 to 10 subjects per item comprising the scale is sufficient to calculate the sample size"[10,11], 300 women were interviewed. Two hundred women were randomly selected from Child Healthcare and Family Planning Centers of Erzurum and Pasinler. One hundred women were selected from Yigittasi and Yastiktepe villages. Stratifying sampling method by settlement place was used and the data were collected through a face to face interview with a questionnaire. Seven women were not accepted to join the study. Verbal informed consent was obtained from the women.

For the validity of language, in the initial stage, two faculty members, experts in the English language and proficient in both languages, translated the scale from English to Turkish independently. This was followed by re-translation to English. This was compared to the original statements and necessary modifications were made to the Turkish wording. The Turkish version of the scale was passed on to a group of experts for their advice on content validity. Scale was further developed based on suggestions and the language validity of the scale was tested by administering the scale to a group of 30 subjects with similar characteristics as the target women.

Reliability: To test internal consistency, Pearson's product moment correlation coefficient was used to assess the relationship between items in the scale, as well as the items in the scale and the total score whereas the relationship between subscales were tested by Spearman rank correlation and Cronbach Alpha reliability analyses.

Validity: To evaluate construct validity and to determine the factor structure of the scale, we conducted a confirmative factor analysis. Before the factor structure of the Conflict Tactics Scales was examined, sampling adequacy was assessed and sampling test size was determined for factor analysis. The results of this preliminary study showed that subjects were not related to each other for the study sample, differences in the matrix were incidental, data were drawn from a multivariate normal distribution, the results were not affected by the sample size, and therefore the sample was sufficient and suitable for factor analysis.

A confirmative factor analysis was used due to the fact that during adaptation of a scale, a hypothesis about the structure of the items was tested[15]. To be able to decide whether or not the scale conforms to the factor model, the correlation between each item and the total score should be greater than 0.20. Secondly, the squared multiple correlation coefficient between one variable and all other variables, in other words, Communality Estimates, which is another indicator of linear relationship between variables, should be 0.20 or higher. Thirdly, factor loadings need to be 0.30 and higher[10,11,16].

In our study, the relationships between the total score and the items about respondent (#19, 33, 37, 43, 47, 57, 61, 63, and 75) and partners' behaviors (#24, 32, 42 and 56) were not explored due to the fact that only one type of answer could be given to these items. All of the subjects answered these items as "This has never happened" (Appendix1.).

All analyses were carried out using SPSS 10.0 statistical software.

Results

The correlations between subscales of the scale are given in Table 1. The highest correlation between behavioral measures, both in respondent's and the partner's behavior, was between psychological violence and physical violence. There was a negative correlation between physical violence and negotiation in the behavioral measures of the partner.

Statistically, in our study, the lowest correlations with respect to behavior of the partner were found between psychological aggression and injury scales and between sexual coercion and injury scales. The highest correlation was observed between psychological aggression and physical assault scales.

The relationship between the behaviors of the respondent and her partner was tested using the Spearman's rank correlation (Table 2). No correlation was observed between the negotiation scale regarding the respondent's behavior and physical assault, sexual coercion, or injury scales regarding the partner's behavior. Other subscales showed significant correlations between each other. The highest correlation was found between negotiation subscales. As another indicator of internal consistency and homogeneity of the Conflict Tactics Scales, Cronbach Alpha reliability coefficients of the overall scale and subscales were computed and are presented in Table 3. Cronbach Alpha coefficients for negotiation, psychological aggression, physical assault, sexual coercion and injury were 0.85, 0.80, 0.83, 0.78 and 0.67, respectively.

Cronbach Alpha coefficient for the behavior of the respondent subscale was 0.82, whereas that of the partner subscale was 0.85. Cronbach Alpha coefficient for the overall scale was 0.90, indicating that internal consistency was very good when all items in the scale were included.

We found a Cronbach Alpha coefficient of 0.32 for the sexual coercion scale for the respondent's and 0.10 for the injury scale for the partner's behavior.

Table 1. Revised Conflicts Tactics Scales (CTS2) Subscales Intercorrelations

CTS2	Subscales				
	Negotiation	Psychological Violence	Physical Violence	Sexual Violence	Injury
Respondent's behavior					
Negotiation	1.00				
Psychological violence	.27*	1.00			
Physical violence		.16*	.54*	1.00	
Sexual violence	.14*	.32*	.40*	1.00	
Injury	.02	.28*	.50*	.05	1.00
Partner's behavior					
Negotiation	1.00				
Psychological violence	- .06	1.00			
Physical violence		- .26*	.61*	1.00	
Sexual violence	- .05	.24*	.28*	1.00	
Injury	- .06	.22*	.24*	.22*	1.00

* $p < 0.001$

Table 2. Subscales Correlations Across Different Forms of Test

Respondent's behavior CTS2 subscales	Partner's behavior subscales				
	Negotiation	Psychological Violence	Physical Violence	Sexual Violence	Injury
Negotiation	.76*	.18*	.03	.05	.06
Psychological violence	.26*	.50*	.29*	.29*	.24*
Physical violence	.12*	.40*	.45*	.34*	.33*
Sexual violence	.20*	.12*	.04	.62*	.22*
Injury	.28*	.52*	.59*	.26*	.33*

* $p < 0.001$

Table 3. Coefficient of Reliability of the Subscales by Partner's and Respondent's behavior (Alpha)

CTS2 Subscales	Respondent's behavior	Partner's behavior	Total
Negotiation	.77	.74	.85
Psychological violence	.62	.74	.80
Physical violence	.74	.79	.83
Sexual violence	.32	.82	.78
Injury	.73	.10	.67
Total scale	.82	.85	.90

A confirmative factor analysis was carried out to determine the construct validity of the scale (Tables 4 and 5). Factor analysis of the respondent's behavior with the number of factors determined by the eigen value of the factor (number of factors with an eigen value of at least 1) and varimax rotation was performed and 4 factors were identified. The first factor included items of physical assault and comprised the physical assault subscale. The second factor included items regarding injury and comprised the injury subscale. The third factor covered both sexual and psychological violence, and items of psychological aggression were shown to have a higher factor load. The fourth factor contained items in the domain of negotiation and comprised the negotiation subscale.

When the scale consisting of 4 factors with an eigen value greater than one, obtained by factor analysis with varimax rotation of partner's behavior was examined, the first factor included items #16, 20, 22, 26, 38, 48, 52, 58, 62, 64, and 76, most of which were related to sexual violence and comprised the sexual coercion subscale. The second factor included items #6, 8, 10, 18, 28, 30, 34, 36, 44, 46, 50, 54, 66, 68, 70 and 74 and comprised the physical assault and psychological aggression subscales. The third factor included items #2, 4, 14, 40, 60, and 78 and comprised the negotiation subscale. Finally, the fourth factor included items #12 and 72 and comprised the injury subscale.

Discussion

In the present study, the highest correlation between the subscales of the respondent's and the partner's behavior was found to be between psychological aggression and physical assault. Statistically, the lowest correlation was found between sexual coercion and negotiation subscales with regard to the respondent's behavior, whereas it was between injury and psychological aggression and between injury and sexual coercion subscales with regard to the partner's behavior. With respect to the respondent's behavior, the lowest correlation between subscales of the original scale developed by Straus, was between sexual coercion and negotiation, and the highest correlations were between psychological aggression and physical assault and between injury and physical assault[12]. In a study by Lucente and colleagues, the lowest correlation was found between sexual coercion and negotiation, and highest correlations between injury and physical assault and between psychological aggression and physical assault in the respondent's behavior. Regarding the partner's behavior, the highest correlation was between psychological aggression and physical assault[13]. These findings are in agreement with our findings.

The highest correlation we found between the behaviors of the respondent and the partner was between negotiation subscales. Lucente and colleagues had also observed a similar result[13].

In our study, we found the Cronbach Alpha coefficients of negotiation, psychological aggression, physical assault, sexual coercion and injury to be 0.85, 0.80, 0.83, 0.78 and 0.67, respectively. These are in agreement with the results of Moraes[14]. However, Cronbach Alpha coefficients for the sexual coercion and injury were lower than those of the original scale by Straus[12].

Lucente and colleagues computed Cronbach Alpha for respondent's and partner's behavior as 0.89 and 0.93, respectively[13]. The results of this study are in agreement with our findings.

As a result, the high internal consistency coefficients that we found point out that this scale has an adequate level of homogeneity and is quite reliable.

Cronbach Alpha values of sexual coercion of the respondent's behavior were 0.32, whereas that of injury subscale of the partner's behavior was 0.10. The results of Lucente and Moraes's studies are in accordance with those of our study[13,14]. Cronbach Alpha of sexual coercion and injury subscales of the respondent's behavior is generally found to be low in other studies as well as in the present study and can be attributable to the fact that there is only a single response to some of the items in this subscale.

Due to the fact that there were single responses to the items #19, 33, 37, 43, 47, 57, 61, 63, 75 and

Table 4. Factor analysis of the respondent's behavior

CTS2 Scale items	Communality estimates	Factor 1 Physical violence	Factor 2 Injury	Factor 3 Sexual V-Psychol. V	Factor 4 Negotiation
Eigen Value		3.73	3.37	3.35	2.99
% of variance		12.43	11.23	11.17	9.99
Negotiation items					
1. I showed my partner I cared even though we disagreed.	0.38	0.19	0.02	-0.07	**0.58**
3. I explained my side of a disagreement to my partner.	0.56	0.12	-0.02	0.15	**0.72**
13. I showed respect for my partner's feelings about an issue.	0.56	-0.01	-0.09	-0.01	**0.74**
39. I said I was sure we could work out a problem.	0.53	0.01	0.18	0.24	**0.67**
59. I suggested a compromise to a disagreement.	0.41	0.01	0.24	-0.01	**0.60**
77. I agreed to try a solution to a disagreement my partner suggested	0.50	-0.08	-0.07	0.20	**0.67**
Psychological violence items					
5. I insulted or swore at my partner.	0.41	0.38	0.25	**0.40**	-0.21
25. I called my partner fat or ugly.	0.42	-0.08	0.06	**0.64**	-0.08
29. I destroyed something belonging to my partner.	0.21	0.04	0.04	**0.38**	0.06
35. I shouted or yelled at my partner.	0.24	0.04	0.05	**0.44**	0.20
49. I stomped out of the room or house or yard during a disagreement.	0.40	0.23	-0.02	**0.55**	0.19
65. I accused my partner of being a lousy lover.	0.39	0.18	0.40	**0.43**	0.13
67. I did something to spite my partner	0.21	0.13	0.02	**0.31**	0.24
69. I threatened to hit or throw something at my partner	0.49	0.27	0.15	**0.62**	-0.03
Physical violence items					
7. I threw something at my partner that could hurt.	0.44	**0.48**	0.16	0.41	-0.11
9. I twisted my partner's arm or hair.	0.55	**0.51**	0.17	0.48	-0.08
17. I pushed or shoved my partner.	0.25	**0.36**	0.19	0.24	0.16
21. I used knife or gun on my partner.	0.52	**0.71**	0.01	-0.05	0.06
27. I punched or hit my partner with something that could hurt.	0.58	**0.67**	0.33	0.16	-0.02
45. I grabbed my partner.	0.65	**0.73**	0.03	0.31	0.13
53. I slapped my partner.	0.31	**0.50**	-0.04	0.23	0.09
73. I kicked my partner.	0.67	**0.81**	0.03	-0.04	0.04
Sexual violence items					
15. I made my partner have sex without a condom	0.35	0.03	-0.08	**0.56**	0.15
51. I insisted on sex when my partner did not want to (but did not use physical force).	0.44	0.20	-0.03	**0.63**	0.08
Injury items					
11. I had a sprain, bruise or small cut because of a fight with my partner	0.51	0.22	**0.67**	0.09	-0.04
23. I passed out from being hit on the head by my partner in a fight.	0.45	0.01	**0.63**	0.22	-0.05
31. I went to a doctor because of a fight with my partner.	0.62	-0.06	**0.78**	0.08	0.03
41. I needed to see a doctor because of a fight with my partner , but I didn't.	0.62	0.31	**0.72**	-0.10	0.02
55. I had a broken bone from a fight with my partner.	0.46	-0.17	**0.63**	0.02	0.17
71. I felt physical pain that still hurt the next day because of a fight with my partner.	0.51	0.25	**0.66**	-0.11	0.06

Table 5. Factor analysis of the partner's behavior

CTS2 Scale items	Communality estimates	Factor 1 Sexual violence	Factor 2 Physical-Psychol violence	Factor 3 Negotiation	Factor 4 Injury
Eigen Value		6.90	5.39	3.07	2.09
% of variance		19.73	15.39	8.76	5.96
Negotiation items					
2. My partner showed care for me even though we disagreed.	0.41	0.01	0.06	**0.60**	-0.39
4. My partner explained his side of a disagreement me.	0.62	-0.06	0.01	**0.78**	0.05
14. My parner showed respect for my feelings about an issue.	0.61	-0.01	-0.21	**0.72**	-0.20
40.My partner was sure we could work it out.	0.53	-0.05	0.07	**0.67**	0.27
60. My partner did this to me.	0.21	-0.10	-0.06	**0.42**	-0.02
78. My partner agreed to try a solution I suggested.	0.46	0.01	-0.18	**0.59**	0.29
Psychological violence items*					
6. My partner did this to me.	0.41	0.05	**0.54**	-0.26	0.22
26. My partner called me fat or ugly.	0.61	0.62	0.11	0.01	0.47
30. My partner did this to me.	0.57	0.40	**0.50**	0.17	0.36
36. My partner did this to me.	0.23	0.06	**0.37**	-0.07	0.29
50. My partner did this to me.	0.55	0.20	**0.62**	0.30	0.17
66.My partner accused me of this.	0.29	0.04	**0.46**	0.06	0.26
68. My partner did this to me.	0.50	0.33	**0.56**	0.24	0.13
70. My partner did this to me.	0.52	0.34	**0.57**	0.06	0.29
Physical violence items*					
8. My partner did this to me.	0.40	0.14	**0.58**	-0.03	0.22
10. My partner did this to me.	0.56	0.14	**0.71**	0.01	0.18
18. My partner did this to me.	0.46	0.23	**0.64**	-0.07	-0.03
22. My partner did this to me.	0.62	0.72	0.27	-0.13	0.05
28. My partner did this to me.	0.52	0.12	**0.71**	0.03	0.02
34. My partner did this to me.	0.20	0.03	**0.35**	-0.16	0.14
38. My partner did this to me.	0.56	0.64	0.39	-0.06	-0.01
44. My partner did this to me.	0.34	0.03	**0.45**	-0.37	-0.07
46. My partner did this to me.	0.51	0.31	**0.59**	0.17	0.19
54. My partner did this to me.	0.29	0.04	**0.53**	-0.05	0.01
62. My partner did this to me.	0.75	0.85	0.17	-0.05	0.01
74. My partner did this to me.	0.56	0.20	**0.71**	0.05	-0.13
Sexual violence items*					
16. My partner did this to me.	0.54	**0.60**	0.01	0.17	0.38
20. My partner did this to me.	0.78	**0.87**	0.11	-0.08	0.01
48. My partner did this to me.	0.70	**0.82**	0.16	-0.06	-0.03
52. My partner did this to me.	0.47	**0.55**	0.13	0.02	0.38
58. My partner did this to me.	0.79	**0.88**	0.12	-0.03	-0.05
64. My partner did this to me.	0.85	**0.91**	0.13	-0.09	-0.01
76. My partner did this to me.	0.60	**0.74**	0.21	-0.06	-0.01
Injury items					
12. My partner had a sprain, bruise or small cut because of a fight with me	0.34	-0.09	0.21	0.19	**0.50**
72. My partner still felt physical pain the next day because of a fight we had.	0.20	-0.03	0.01	-0.11	**0.38**

items #24, 32, 42, 56 with regard to the respondent's and partner's behavior, respectively, correlation analysis between these items and the total score was not conducted. Therefore, these items were not included in the factor analysis. Correlations between other items comprising the scale and the total score exceeded 0.20, Communality Estimates (common variance) were over 0.20 and factor loadings were 0.30 and higher. Similarly, Jones and colleagues excluded items #5, 21, 35, 43, 49, 51 of the respondent's and items #16, 36, 50, 52, 66 and 72 of the partner's behavior from the factor analysis[17].

During 5 factor analysis with varimax rotation to examine construct validity of "respondent's behavior" and "partner's behavior", it was not observed a good distribution. Therefore, considering the clusters of items and factor loadings, we concluded that 4-factor structure was the most suitable analysis.

When the 4-factor structure of the "respondent's behavior" of the scale was explored, the first factor was for physical assault and the second for injury. The third factor contained both sexual and psychological violence, and items of psychological aggression had a higher factor load. The fourth factor contained items of negotiation subscale. Similarly, Jones and colleagues confirmed that the 4-factor analysis was more suitable compared to other analyses. In the present study, the first factor was named "general assault" and contained both physical and psychological violence. Items of physical assault showed a higher factor load. The second factor contained items of injury subscale. The third factor comprised the negotiation subscale, whereas the fourth factor contained items of the sexual coercion subscale[17].

When the 4-factor structure of the "Partner's behavior" of the scale was explored, the first factor was for sexual coercion. The second factor comprised the physical assault and psychological aggression subscales. The third factor was for negotiation and the fourth for injury. Jones and colleagues carried out a 4-factor analysis on the partner's behavior and named the first factor "general assault" which contained both physical and psychological violence, with physical violence having a higher factor load. The second factor comprised the items of sexual coercion. The third factor comprised the negotiation subscale, whereas the fourth factor included items of the injury subscale[17].

Conclusion

It was observed that the factor structure was greatly preserved following adaptation of the scale to the Turkish population. However, generalization of the 5-factor structure of the scale could not be confirmed. Meanwhile, we observed that the 4-factor structure that transpired in the present study overlapped the basic concepts during the writing-up of the items of the scale. Conceptual structure and the opinions of experts were taken into consideration during naming of the factors. Although there are some weak items, it seems that the Turkish version of the Conflict Tactics Scales is a valid and reliable scale to assess domestic violence against Turkish women.

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Appendix 1. Conflicts Tactics Scales - 2

RELATIONSHIP BEHAVIORS

No matter how well a couple gets along, there are times when they disagree, get annoyed with the other person, want different things from each other, or just have spasts or fights because they are in a bad mood, are tired, or for some other reason. Couples also have many different ways of trying to settle their differences. This is a list of things that might happen when you have differences. Please circle how many times you did each of these things in the past year, and how many times your partner did them in the past year. If you or your partner did not do one of these things in the past year, but it happened before that, circle "7."

How often did this happen?

1= Once in the past year
2= Twice in the past year
3= 3-5 times in the past year
4= 6-10 times in the past year
5= 11-20 times in the past year
6= More than 20 times in the past year
7= Not in the past year, but it did happen before
0= This has never happened

1. I showed my partner I cared even though we disagreed.	1	2	3	4	5	6	7	0
2. My partner showed care for me even though we disagreed.	1	2	3	4	5	6	7	0
3. I explained my side of a disagreement to my partner.	1	2	3	4	5	6	7	0
4. My partner explained his side of a disagreement me.	1	2	3	4	5	6	7	0
5. I insulted or swore at my partner.	1	2	3	4	5	6	7	0
6. My partner did this to me.	1	2	3	4	5	6	7	0
7. I threw something at my partner that could hurt.	1	2	3	4	5	6	7	0
8. My partner did this to me.	1	2	3	4	5	6	7	0
9. I twisted my partner's arm or hair.	1	2	3	4	5	6	7	0
10. My partner did this to me.	1	2	3	4	5	6	7	0
11. I had a sprain, bruise or small cut because of a fight with my partner	1	2	3	4	5	6	7	0
12. My partner had a sprain, bruise or small cut because of a fight with me	1	2	3	4	5	6	7	0
13. I showed respect for my partner's feeling's about an issue.	1	2	3	4	5	6	7	0
14. My parner showed respect for my feelings about an issue.	1	2	3	4	5	6	7	0
15. I made my partner have sex without a condom	1	2	3	4	5	6	7	0
16. My partner did this to me.	1	2	3	4	5	6	7	0
17. I pushed or shoved my partner.	1	2	3	4	5	6	7	0
18. My partner did this to me.	1	2	3	4	5	6	7	0
19. I used force (like hitting, holding down, or using a weapon) to make partner have oral or anal sex	1	2	3	4	5	6	7	0
20. My partner did this to me.	1	2	3	4	5	6	7	0
21. I used knife or gun on my partner.	1	2	3	4	5	6	7	0
22. My partner did this to me.	1	2	3	4	5	6	7	0
23. I passed out from being hit on the head by my partner in a fight.	1	2	3	4	5	6	7	0
24. My partner passed out from being hit on the head in a fight with me.	1	2	3	4	5	6	7	0
25. I called my partner fat or ugly.	1	2	3	4	5	6	7	0
26. My partner called me fat or ugly.	1	2	3	4	5	6	7	0
27. I punched or hit my partner with something that could hurt.	1	2	3	4	5	6	7	0
28. My partner did this to me.	1	2	3	4	5	6	7	0
29. I destroyed something belonging to my partner.	1	2	3	4	5	6	7	0
30. My partner did this to me.	1	2	3	4	5	6	7	0

31. I went to a doctor because of a fight with my partner.	1	2	3	4	5	6	7	0
32. My partner went to a doctor because of a fight with me.	1	2	3	4	5	6	7	0
33. I choked my partner.	1	2	3	4	5	6	7	0
34. My partner did this to me.	1	2	3	4	5	6	7	0
35. I shouted or yelled at my partner.	1	2	3	4	5	6	7	0
36. My partner did this to me.	1	2	3	4	5	6	7	0
37. I slammed my partner against a wall.	1	2	3	4	5	6	7	0
38. My partner did this to me.	1	2	3	4	5	6	7	0
39. I said I was sure we could work out a problem.	1	2	3	4	5	6	7	0
40.My partner was sure we could work it out.	1	2	3	4	5	6	7	0
41. I needed to see a doctor because of a fight with my partner, but I didn't.	1	2	3	4	5	6	7	0
42. My parner needed to see a doctor because of a fight with me, but didn't.	1	2	3	4	5	6	7	0
43. I beat up my partner.	1	2	3	4	5	6	7	0
44. My partner did this to me.	1	2	3	4	5	6	7	0
45. I grabbed my partner.	1	2	3	4	5	6	7	0
46. My partner did this to me.	1	2	3	4	5	6	7	0
47. I used force (like hitting, holding down, or using a weapon) to make my partner have sex.	1	2	3	4	5	6	7	0
48. My partner did this to me.	1	2	3	4	5	6	7	0
49. I stomped out of the room or house or yard during a disagreement.	1	2	3	4	5	6	7	0
50. My partner did this to me.	1	2	3	4	5	6	7	0
51. I insisted on sex when my partner did not want to (but did not use physical force).	1	2	3	4	5	6	7	0
52. My partner did this to me.	1	2	3	4	5	6	7	0
53. I slapped my partner.	1	2	3	4	5	6	7	0
54. My partner did this to me.	1	2	3	4	5	6	7	0
55. I had a broken bone from a fight with my partner.	1	2	3	4	5	6	7	0
56. My partner had a broken bone from a fight with me.	1	2	3	4	5	6	7	0
57. I used threats to make my partner have oral or anal sex.	1	2	3	4	5	6	7	0
58. My partner did this to me.	1	2	3	4	5	6	7	0
59. I suggested a compromise to a disagreement.	1	2	3	4	5	6	7	0
60. My partner did this to me.	1	2	3	4	5	6	7	0
61. I burned or scalded my partner on purpose.	1	2	3	4	5	6	7	0
62. My partner did this to me.	1	2	3	4	5	6	7	0
63. I insisted my partner have oral or anal sex (but did not use physical force).	1	2	3	4	5	6	7	0
64. My partner did this to me.	1	2	3	4	5	6	7	0
65. I accused my partner of being a lousy lover.	1	2	3	4	5	6	7	0
66. My partner accused me of this.	1	2	3	4	5	6	7	0
67. I did something to spite my partner	1	2	3	4	5	6	7	0
68. My partner did this to me.	1	2	3	4	5	6	7	0
69. I threatened to hit or throw something at my partner	1	2	3	4	5	6	7	0
70. My partner did this to me.	1	2	3	4	5	6	7	0
71. I felt physical pain that still hurt the next day because of a fight with my partner.	1	2	3	4	5	6	7	0
72. My partner still felt physical pain the next day because of a fight we had.	1	2	3	4	5	6	7	0
73. I kicked my partner.	1	2	3	4	5	6	7	0
74. My partner did this to me.	1	2	3	4	5	6	7	0
75. I used threats to make my partner have sex.	1	2	3	4	5	6	7	0
76. My partner did this to me.	1	2	3	4	5	6	7	0
77. I agreed to try a solution to a disagreement my partner suggested	1	2	3	4	5	6	7	0
78. My partner agreed to try a solution I suggested.	1	2	3	4	5	6	7	0

Appendix 2. (Turkish version of the CTS2)

	Son bir yılda kaç kez oldu?						Son 1 yılda olmadı, fakat daha önce oldu	Bu asla olmadı
	1	2	3-5	6-10	11-20	>20		
1. Fikrimizin uyuşmadığı zamanlarda bile eşime ilgisiz kalmadım.								
2. Fikrimizin uyuşmadığı zamanlarda bile eşim bana ilgisiz kalmadı								
3. Eşime aramızdaki sorunu kendi yönünden açıkladım.								
4. Eşim bana aramızdaki sorunu kendi yönünden açıkladı.								
5. Eşime hakaret veya küfür ettim.								
6. Eşim bana hakaret veya küfür etti.								
7. Eşime onu incitecek bir şey fırlattım.								
8. Eşim bana incitecek bir şey fırlattı.								
9. Eşimin elini, kolunu büktüm veya saçını çektim.								
10. Eşim benim elimi, kolumu büktü veya saçımı çekti.								
11. Eşimle kavga ettiğimiz için bende burkulma, ezik veya küçük bir kesik oluşmuştu.								
12. Kavga ettiğimiz için eşimde burkulma, ezik veya küçük bir kesik oluşmuştu.								
13. Tartıştığımız bir konuda eşimin fikrine saygı duydum.								
14. Tartıştığımız bir konuda eşim fikrime saygı duydu.								
15. Eşimi kaput kullanmadan ilişkiye soktum.								
16. Eşim beni kaput kullanmadan ilişkiye soktu.								
17. Eşimi ittim veya dirsek attım.								
18. Eşim beni itti veya dirsek attı.								
19. Vurma, yatırma veya silahla tehdit etme gibi yollara başvurarak eşimi normal dışı ilişkiye zorladım.								
20. Vurma, yatırma veya silahla tehdit etme gibi yollara başvurarak eşim beni normal dışı ilişkiye zorladı.								
21. Eşime bıçak veya silah çektim.								
22. Eşim bana bıçak veya silah çekti.								
23. Bir kavgada eşim başıma vurduğu için bayıldım.								
24. Bir kavgada eşimin başıma vurduğum için bayıldı.								
25. Eşimle şişko yada çirkinsin diye alay ettim.								
26. Eşim benimle şişko yada çirkinsin diye alay etti.								
27. Eşimi yumrukladım veya incitecek bir şeyle ona vurdum.								
28. Eşim beni yumrukladı veya incitecek bir şeyle bana vurdu.								
29. Eşime ait bir eşyayı kasıtlı olarak kırdım.								
30. Eşim bana ait bir eşyayı kasıtlı olarak kırdı.								
31. Eşimle olan kavgadan ötürü doktora göründüm.								
32. Eşim benimle olan kavgadan ötürü doktora göründü.								
33. Eşimin nefes almaması için ağzımı burnumu kapattım.								
34. Eşim nefes almamam için ağzımı burnumu kapattı.								
35. Eşime sesimi yükselterek bağırdım.								
36. Eşim bana sesini yükselterek bağırdı.								
37. Eşimi duvara çarptım.								

38. Eşim beni duvara çarptı.								
39. Problemi çözebileceğimizi söyledim.								
40. Eşim problemi çözebileceğimizi söyledi.								
41. Kavgamız yüzünden doktora gitmem gerektiği halde gitmedim.								
42. Eşim kavgamız yüzünden doktora gitmesi gerektiği halde gitmedi.								
43. Eşime dayak attım.								
44. Eşim bana dayak attı.								
45. Eşimi tutup sıktım.								
46. Eşim beni tutup sıktı.								
47. Vurma, yatırma veya silahla tehdit etme gibi yollara başvurarak eşimi cinsel ilişkiye zorladım.								
48. Vurma, yatırma veya silahla tehdit etme gibi yollara başvurarak eşim beni cinsel ilişkiye zorladı.								
49. Bir tartışmada eşimi yanımdan kovdum.								
50. Bir tartışmada eşim beni yanından kovdu.								
51. Eşime kaba kuvvet kullanmadan cinsel ilişkiye girmek için ısrar ettim.								
52. Eşim kaba kuvvet kullanmadan cinsel ilişkiye girmek için ısrar etti.								
53. Eşime tokat attım.								
54. Eşim bana tokat attı.								
55. Kavgada kemiğim kırıldı.								
56. Kavgada eşimin kemiğim kırıldı.								
57. Normal ilişkinin dışında cinsel ilişkiye girmesi için eşimi tehdit ettim.								
58. Normal ilişkinin dışında cinsel ilişkiye girmek için eşim beni tehdit etti.								
59. Aramızdaki problemi çözmek için ödün verdim.								
60. Eşim aramızdaki problemi çözmek için ödün verdi.								
61. Eşimi kaynar su vb. şeylerle yaktım.								
62. Eşim beni kaynar su vb. şeylerle yaktı.								
63. Eşime kaba kuvvet kullanmadan normal dışı cinsel ilişkiye girmesi için ısrar ettim.								
64. Eşim kaba kuvvet kullanmadan normal dışı cinsel ilişkiye girmek için ısrar etti.								
65. Eşimi çok kötü bir hayat arkadaşı olmakla suçladım.								
66. Eşim beni çok kötü bir hayat arkadaşı olmakla suçladı.								
67. Eşimi kızdıracak kasıtlı bir şey yaptım.								
68. Eşim beni kızdıracak kasıtlı bir şey yaptı.								
69. Eşimi vurmakla yada bir şey atmakla tehdit ettim.								
70. Eşim bana vurmakla yada bir şey atmakla tehdit etti.								
71. Kavga sonrasında ertesi gün bile acılarım devam etti.								
72. Kavga sonrasında eşimin ertesi gün bile acıları devam etti.								
73. Eşime tekme attım.								
74. Eşim bana tekme attı.								
75. Eşimi cinsel ilişkiye girmesi için tehdit ettim.								
76. Eşim beni cinsel ilişkiye girmek tehdit etti.								
77. Eşimin önerdiği çözümü denemeyi kabul ettim.								
78. Eşim önerdiğim çözümü denemeyi kabul etti								

State of immunity against measles in vaccinated children aged 1-3 years in Malatya, Turkey

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Abstract

The aim of this study was to determine the state of immunity against measles in children who lived in the city of Malatya and who were aged 1-3 years and who had received one dose of measles vaccine in the city of Malatya.

A total of 210 vaccinated children 12 to 47 months old were selected for the study using WHO/EPI 30 cluster survey methodology. The children were visited at their home and their parents were administered a questionnaire on sociodemographic characteristics and disease history. The children's weight and height were measured, blood samples were taken and IgG antibodies were studied by micro-ELISA.

Overall, 158 children (75.2 %) had positive anti-measles IgG with serum levels ≤250 mIU/ml. No significant association was detected between individual characteristics of the children and measles seroconversion. Mean anti-measles IgG titer among those who were seropositive (158 children) was 1996.0 ± 106.7 mIU/ml.

In conclusion the study showed that one fourth of vaccinated children were still susceptible to measles confirming previous studies conducted in the country.

Key words: Measles, vaccine, immunity, anti-measles IgG, measles seroconversion

Introduction

Measles has been considered a heavy public health burden worldwide despite available vaccination. World Health Organization (WHO) reported 30-40 million measles cases and 745 000 deaths for the year 2001. Deaths mostly occur because of complications like pneumonia, diarrhoea and malnutrition especially in developing countries[1].

An efficient and cost-effective live attenuated vaccine has been in use since 1963 and recommended by the Expanded Programme on Immunization in 1974. To reach coverage rates of at least 90% has been recommended to eliminate the disease[2]. Measles vaccine provides immunity for a long time in most people. Antibody was shown positive after 8-16 years of vaccination in some prospective studies[3]. Some children cannot develop immunity against measles after vaccination for various reasons such as presence of maternally acquired antibodies, improper vaccine handling or physical health of the child[4,5]. Recent studies suggested that there is a genetic predisposition to measles seronegativity related to HLA type[6].

Measles vaccination of infants at the age of 9 months was started in 1985 with a national vaccination campaign and has been routinely conducted since 1986 in Turkey. Measles remains endemic in Turkey, and is the most frequently reported vaccine preventable disease both in Malatya and all over the country[7]. Measles is in the sixth and seventh place of death causes in 0-14 age group Turkish girls and boys, respectively.[8] Measles outbreaks occur every 2 to 3 years with recent outbreaks in 1993, 1996, 1998,

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2001[9]. These epidemics led to the reevaluation of measles vaccination policy during the past ten years by studying seroconversion rates and coverage rates. Vaccination coverage rate for the country was estimated as 80%, ranging between 58.6% in the east, 88.9% in the west and 90.3% in Central Anatolia and studies showed a seropositivity around 70 - 75%. A first and immediate attempt to administer a second dose of measles vaccine to first grade students (around 6 and 7 years of age) was implemented in 1998.[7,9-11]

To our knowledge there has been no seroprevalence study in the field among children under five years in Malatya. According to the informal data of Malatya Health Directorate measles vaccine coverage was 88% in 2001 and 83% in 2002. The aim of this study was to determine the state of immunity against measles among children aged 1-3 years and who had received one dose of measles vaccine in the city of Malatya.

Materials and methods

The population studied were children aged 1-3 years (12-47 months) old who had had one dose of measles vaccine (either Edmonston Zagreb -SII- or Schwartz strain-Aventis Pasteur-) at the time the survey was conducted. All of the children were residents in the city of Malatya. Permission from the University and Malatya Governership was obtained to conduct the survey. It should be noted that the participated children were the vaccinated children, the sample represented the vaccinated children in the city of Malatya, thus their sociodemographic characteristics were better than the general.

WHO/EPI 30 cluster survey methodology[12,13] was used to select the study population. In Malatya, routine infant immunization is implemented by health units. Health units are divided into subpopulations of 2-3 thousands called health houses. Health houses were selected as sampling units in the study. The list of all health houses with their populations was obtained from Malatya Health Directorate. Cumulative list of health houses (both urban and rural) populations was created and 30 clusters were selected by systematic sampling method from a random start. Choosing seven children per cluster, a total of 210 children were studied.

Receiving one dose of measles vaccine at least one month before the interview, completion of 12 months and not finishing 48th month of age were decided on, as selection criteria for the study. Children who complied with the criteria were selected randomly by using the list of health houses vaccination records.

Data collection was performed between February-April 2002. Selected children were visited at their homes by researchers accompanied by midwives. After giving voluntary and informed consent, children's mothers were administered a questionnaire including items about demographic characteristics and children's past and present medical history. The administration date of measles vaccine was obtained from children's vaccination card. The children who had not a vaccination date on the vaccination card or on "child monitoring card" at health unit were not included in the study. Children's height and weight were measured.

Blood sampling and laboratory analysis: Through venipuncture, 3 ml of blood sample was obtained. Sera were separated from blood samples and were frozen at -20 °C for one year and then tested for anti-measles IgG by micro-ELISA (Euroimmun ELISA, Germany). Sera with 250 mIU/ml of anti-measles IgG were considered positive according to the Euroimmun prospectus. Instrument calibration was performed for every group of tests performed and antibody were standardized by calibration against the International Standard.[14]

Anthropometric measurements were evaluated using weight-for-height, weight-for-age and height-for-age growth tables defined by U.S. National Center for Health Statistics, Centers for Disease Control. Children were classified as overweight if their weight-for-age is over 95th percentile, underweight if their weight-for-age is below 3rd percentile, stunted if their height-for-age is below 3rd percentile and wasted if their weight-for-height is below 3rd percentile, adjusted for sex.[15]

Data entry and statistical analysis were performed using the SPSSWIN 9.0 program. Averages were presented with 1 standard error. Chi-square test was used to detect any association with the state of immunity (in terms of positive serology versus negative) and different personal and vaccination factors. A p value of <0.05 was considered statistically significant. Arithmetic means of anti-measles IgG titers were calculated and presented with standard upper and lower confidence limits. The differences between mean anti-measles IgG titers among children who were seropositive (158 children) and cited

factors were analyzed by Mann-Whitney U and Kruskal Wallis Variance analysis tests.

Results

The mean age of the studied 210 children was 26.7±0.6 months (median:26.0, minimum: 12.20, maximum: 47.33) and 48.1% were male. Thirty percent were not under health insurance coverage, 27.6% had families whose monthly income was under minimum wage (112$) and 13.8% had mothers who did not complete primary education. The demographic characteristics of the children are shown in Table 1.

Table 1. Demographic characteristics of the study population (Malatya, 2002)

Demographic characteristics	n	%
Age (months)		
12-23	93	44.3
24-35	85	40.5
≥36	32	15.2
Sex		
Male	101	48.1
Female	109	51.9
Mother education		
Primary incomplete	29	13.8
Primary complete	105	50.0
Secondary complete/+	76	36.2
Health insurance		
Under coverage	147	70.0
Not under coverage	63	30.0
Monthly income ($)		
≤112*	58	27.6
113-225	53	25.2
226-338	27	12.9
≥339	72	34.3
Residency		
Urban	196	93.3
Rural	14	6.7
Total	210	100.0

* Minimum wage established for the first half of 2002.

The mean age at vaccination was 10.7±0.2 months (median: 9.7 months, minimum:6.2, maximum: 31.7). Most of the children (80.5%) had been vaccinated between 9-12 months of age, 7.6% vaccinated before the age of 9 months. Mean months past since the administration of vaccine was 16.1±0.6 (range 1.5-38.7). Children who lived in villages were vaccinated in their homes (6.7%). Regarding anthropometric measurements, overall 19 (9.0%) children were underweight, 6 (2.9%) were overweight, 20 (1.0 %) were stunted and 12 (5.7%) were wasted. No differences were determined between males and females in terms of mean age, mean weight, mean height, mean age at vaccination, mean months since vaccination, underweight, overweight, stunted or wasted status.

Of the 210 vaccinated children, 158 (75.2%) showed anti-measles IgG serum levels 250 mIU/ml. In 29 children (13.8%) no measles antibody activity was detected, and 23 children had titers <250 mIU/ml, thus 24.8% of the children did not have protective antibody. Immun status was not significantly associated with any personal or vaccination factors (p>0.05) (Table 2) despite seronegativity was slightly higher in children who had received the vaccine before the age of 9 months (37.5%) and who were stunted (30.0%).

The arithmetic mean of anti-measles IgG titers among those who had a positive level of antibody (158 children) was 1996.0±106.7 (CI: 1785.3-2206.8) The relationship between the mean anti-measles antibody levels and children's personal or vaccination features were also evaluated and no association was found (Table 3).

Discussion

Our study revealed a seropositivity of 75% for measles at the age group of 1-3 years among vaccinated children living in the city of Malatya. This finding was comparable with the other studies conducted in Turkey. A study from İzmir by Egemen et al.[16] showed a seropositivity of 80% for measles in children aged 1-3 years. Measles seropositivity after immunization was reported to be 85.0% among 10-17 months old children in 1996 in İzmir by Cicekliogluu M. et al.[17] In the same year, Ozkan S. et al's.[18] study in Ankara showed that only 71.2% of the vaccinated children aged 2-5 years were seropositive. A seroprevalence rate of 79.7% was reported from Adana by Evliyaoglu N. et al.[19], and 77.6% was from a Well Baby Clinic at a university hospital in Istanbul by Isık N. et al.[20]

WHO reported that measles antibodies developed in approximately 85% of children vaccinated at 9 months of age, 95% of children vaccinated at 12 months of age, and 98% of those vaccinated at 15 months of age. In a study from USA, it was reported that 71%, 95% and 100% of children responded to

Table 2. Percentage distribution of anti-measles IgG serology according to selected personal and vaccination factors (Malatya, 2002)

Factors	Anti-IgGmIU/ml				Total	Statistics p
	Negative		Positive			
Age (Months)	n	%	n	%		
12-23	23	24.7	70	75.3	93	
24-35	20	23.5	65	76.5	85	0.877
≥36	9	28.1	23	71.9	32	
Sex						
Male	26	25.7	75	74.3	101	0.873
Female	26	23.9	83	76.1	109	
Time after shot (Months)						
<12	21	26.9	57	73.1	78	
12-23	19	19.8	77	80.2	96	0.236
≥24	12	33.3	24	66.7	36	
Age at vaccination (Months)						
<9	6	37.5	10	62.5	16	
9-11	39	23.1	130	76.9	169	0.665
12-14	2	18.2	9	81.8	11	(trend x^2)
15-17	1	20.0	4	80.0	5	
≥18	4	44.4	5	55.6	9	
Place of administration						
Health Unit	51	26.0	145	74.0	196	0.196
Home	1	7.1	13	92.9	14	
Anthropometric measurement						
Weight-for-age						
Underweight	4	21.1	15	78.9	19	
Normal	48	25.9	137	74.1	185	0.324
Overweight	0	0.0	6	100.0	6	
Height-for-age						
Not stunted	46	24.2	144	74.8	190	0.568
Stunted	6	30.0	14	70.0	20	
Weight-for-height						
Not wasted	51	25.8	147	74.2	198	
Wasted	1	8.3	11	91.7	12	0.175
Total	52	24.8	158	75.2	210	

measles vaccine at 6,12 and 16 months of age, respectively[2]. In developed countries a high percentage of study subjects developed protective levels of anti-measles IgG antibodies after vaccination. Authors accepted that in the general population, if properly immunized, 95% of children could be expected to respond serologically to measles vaccine.[21] Compared to developed countries antibody response in our study was quite low. In developing countries where children were vaccinated at or after the age of 9 months, seropositivity rates were lower as in our study. Seropositivity has been reported to be 71-86% from South Africa among children vaccinated at or after the age of nine months.[22]

Host factors like age, nutritional status, intercurrent illness, immunsupression [as in HIV], agent factors such as strain type, genotype and dose, and programme factors such as cold chain, use of disinfectants to sterilize syringes and needles and variations in the dose, and route of administration are the factors which affect seroconversion[22]. A genetic predisposition to measles seroconversion has also been suggested which is related to HLA type.[6] In our study no difference was determined in seropositivity status among children according to their age, gender, nutritional status and place of vaccination. Though significant differences could not be detected, seropositivity were less among

Table 3. Mean anti-measles IgG according to selected personal and vaccination factors among vaccinated children who were seropositive (Malatya, 2002)

Factors	Anti-IgGmIU/ml	95% CI of Mean	Total	Statistics p
Age (Months)				
12-23	2035.7	1694.1-2377.3	70	
24-35	1938.9	1646.1-2231.7	65	0.966
≥36	2036.9	1377.9-2695.9	2	
Sex				
Male	1890.7	1609.5-2172.0	75	
Female	2091.2	1558.6-2169.6	83	0.534
Time past since vaccination (Months)				
<12	1897.1	1559.6-2234.5	57	
12-23	2078.4	1767.5-2389.2	77	0.721
≥24	1967.0	1132.3-2283.8	24	
Age at vaccination (Months)				
<9	1654.6	1136.9-2172.2	10	
9-12	2087.4	1849.2-2325.6	130	0.100
>12	1525.9	883.0-2168.8	18	
Place of administration				
Health Unit	2019.0	1793.6-2244.3	145	
Home	1740.1	1185.2-2294.9	13	0.747
Anthropometric measurement				
Weight-for-age				
Underweight	1684.3	1207.6-2161.1	15	
Normal	2040.4	1805.4-2275.4	137	0.818
Overweight	1762.1	528.7-2995.4	6	
Height-for-age				
Not stunted	1653.6	1203.5-2103.7	144	
Stunted	2029.3	1801.8-2256.8	14	0.586
Weight-for-height				
Not wasted	1622.5	977.1-2267.8	147	
Wasted	2024.0	1801.7-2246.3	11	0.408
Total	1760.2	1555.2-1965.2	158	

children who were vaccinated before the age of 9 months and after the age of 18 months. It should be noted that the method of our study has some limitation for comparison. The design and sample size was suitable to describe rather than comparison. However the study showed the necessity of further research to determine the primary and secondary vaccine failure level and reasons in terms of maternal antibodies' effects, any moleculer effect such as HLA type or agent genotype.

Despite all above explanations, since most outbreaks occured among appropriately vaccinated children and in societies with coverage levels of greater than 95%, World Health Organization (WHO), Advisory Committee on Immunization Practices (ACIP) and Pan American Health Organization (PAHO) agreed on the two factors contributed to the build-up of susceptible children. First, measles vaccine was less than 100% effective leaving some children unprotected after vaccination. Thus, the necessity of two-doses of measles vaccination was obvious.[16] Second, measles vaccination coverage for each birth cohort could not reach all children. Thus, they recommended (a) one-time catch-up campaign targeting all children aged 1-14 years, (b) follow-up campaigns in every four years if the coverage level is about 80%.[23,24] In the light of this strategy, The Turkish Ministry of Health launched a national vaccination campaign among children aged 9 months to 14 years in 2003-2004 to achieve

measles elimination by 2010. Increasing routine two- dose vaccination coverage to over 95% is another target of the campaign. The data of our study reminds the necessity of giving the vaccine after twelve months of age.

In conclusion, the study showed that the vaccination resulted in one fourth of the children being unprotected at 13-48 month of age. The result is that susceptible children accumulated over a few years. Implementing the national campaign with great punctuality locally should be one of the most important duties of all health personnel in Malatya in order to interrupt measles transmission.

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Smoking Knowledge, Attitudes and Behaviour of Teachers Working at Elementary and High Schools in the Ergazi Health Center Region

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Abstract

Of the 190 teachers working at three elementary schools and one high school in Ergazi Health Center Region (Ankara, Turkey), 145 (76.3%) participated in a cross-sectional study in June 2004. The aim was to determine the knowledge, attitudes and behaviour of teachers regarding smoking. Data were gathered with a questionnaire and analysed with Epi-Info 5.0 computer programme. The teachers did not have sufficient knowledge of the diseases caused by smoking. Most of the teachers considered friends and family to be more effective role models for their students in terms of smoking initiation. More than half of the teachers were current smokers.

Keywords: Attitude, behaviour, knowledge, smoking, teacher

Introduction

Smoking is a health problem, and also tends to reflect socioeconomical status. In developed countries, the prevalance of smoking is 30-50% for males and 20-40% for females. The smoking rate is different in females (2-10%) living in developing countries[1]. In 2000, there were 1.2 billion people addicted to smoking in the world[2]. In Turkey, the estimated number of people who smoke is 17 million[3].

Smoking is a preventable cause of morbidity and mortality. The smoking habit is the primary cause of cancer mortality in developed countries. 40-45% of male deaths and 30% of overall deaths from cancer are due to smoking[1].

In this century, it has been shown that the prevalance of lung cancer is increasing. In a study by Ochsner and DeBakey in 1939, it was found that this trend was due to an increase of smoking in the population[4]. Smoking is the major factor in the etiology of lung cancer (90% in males and 70% in females). In developed countries, the increased rate of smoking in females is the leading cause of the increasing prevalance of lung cancer[1,5].

The main causes of smoking-related deaths are lung cancers, ischemic heart diseases and chronic obstructive lung diseases[6,7]. Most of the diseases, including respiratory diseases, are related to smoking[8].

In Turkey, there is a limited number of studies on smoking prevalance. The study conducted in 1988 by the Ministry of Health is still the one that has the largest sampling. According to this study conducted by PIAR, in people over the age of 15, cigarette addiction is 62.9% in males and 24.3% in females. The overall smoking rate is 43%[9].

In Europe, Turkey is the second country, after Greece, in cigarette consumption. Cigarette consumption in Turkey increased to 2.7 per person in 1984, up from 1.8 per person in 1976[1].

According to 1990 mortality data from the State Institute of Statistics, the three diseases related to smoking (heart-vessel diseases, cancers and cerebrovascular diseases) were among the first three leading causes of death. Also, according to data of the Ministry of Health, Department of Cancer, early diagnosed cancer cases increased by a factor of three between 1983-1990.

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In Turkey, studies conducted recently indicate that the age of smoking initiation is also progressively decreasing. According to a study by PIAR (1988), the smoking rate among people aged 15-18 was 30%[9].

In a study conducted in 1997 in Ankara among secondary school students, the percentage of smoking was 3.6%, whereas it was 27.1% among high school students. The age of first smoking in these groups was 12.4 and 14.2 years respectively[1]. However, another study conducted in Ankara (1998) among elementary school students (n=1031) showed that, between the ages of 7-13, they have tried smoking at least once[10]. A 1986 report of The World Health Organization indicated that, in some countries in Europe, the smoking rate was 3.5-25% among male students, whereas it was 1.3-23.3% among females. In high school students, this rate increased to 12.7-41.7% and 13.8-37.6%, respectively.

Smoking addiction starts at the age of 15-19 in about 40% of the cases[11]. The environment plays an important role in smoking initiation. Studies show that the causes of smoking initiation differ including "curiosity" and "environment" as well. The teacher, as a role model, has an important influence on the students' behaviour[11,12]. The influence of a high smoking prevalance among teachers is considerable as this occupational group is a role model for students.

Avoidance of smoking addiction among children and adolescents is an important strategy in the struggle against smoking. Although the most popular approach to preventing smoking among adolescents is "educational programmes in schools", there are a limited number of studies on this issue[13].

As it is known the first experience of smoking takes place at school, thus it can be projected that, the smoking prevention policies and the behavioural patterns in schools may decrease the rate of smoking among the students[14]. A study conducted in Wales investigating smoking restrictions in schools, showed that smoking addiction was 9.5% in the schools where smoking was forbidden for all students and teachers, whereas it was 30.1% in schools where there are no restrictions about smoking. In schools where mild restrictions were applied, the cigarette addiction prevalance, defined as "at least one cigarette per day", was 21%[15]. Unless there are dissuasive sanctions, smoking prohibitions alone do not seem to be more successful than forbidding smoking in houses or public places[15,16].

Teachers play an active role in smoking prevention and education on the harmful effects of smoking. In a study indicating that teachers' smoking habits are effective on the students' beginning to smoke, it was found that male teachers' smoking habits particularly influenced high school students' smoking behaviour[17]. Teachers' smoking prevalance affects smoking prevention programmes in schools.

Different studies indicate that teachers' smoking prevalance is 40-50% in Turkey[18]. Although the studies on smoking give an indication of the prevalance of smoking among children and adolescents in Turkey, there is a limited number of studies about the knowledge, attitudes and behaviour of teachers who play an important role in smoking prevention.

In this study, it was aimed to determine some socio-demographic characteristics, smoking habits and smoking knowledge, attitudes and behaviour of teachers working at three elementary schools and one high school located in the region of the Ergazi Health Center.

Materials and Methods

Ergazi Health Center serves a population of 34,285 and is located in the west part of Ankara city and in the south part of the Batıkent region.

The research was conducted in one high school and three elementary schools in the region. The teachers working in these schools comprised the universe of the study. As it was planned to reach every teacher working in the schools, no sampling was done (Table 1).

The research is a cross-sectional epidemiological study. The variables are prevalance of smoking, teachers' knowledge, attitudes and behaviour about smoking and some socio-demographical characteristics (age, sex, etc.). A questionnaire (44 questions) was used to gather the data. Data were collected in the third and fourth weeks of June 2004 and the Epi-Info 5.0 computer programme was used in the analysis of the data. Before administering the questionnaire, the purpose of the questionnaire was explained to the teachers. Verbal permission was obtained from the participants. After the interview, the participants were given information about smoking and the hazards of smoking.

Table 1. Distribution of teachers according to their schools and their participation in the study (Ankara, Ergazi Health Center Region, June 2004)

Schools	*Teachers in schools*		*Teachers participated*		Participation
	n	%	n	%	rate %
Ahmet Hamdi Tanpınar[1]	63	33.1	48	33.1	76.2
Ergazi[1]	40	21.1	30	20.7	75.0
Turkan-Azmi Koksoy[1]	40	21.1	30	20.7	75.0
Nermin Mehmet Cekic[2]	47	24.7	37	25.5	78.7
Total	190	100.0	145	100.0	76.3

[1] Elementary Schools

[2] Anatolian High School

Results

The mean age of teachers was 42.5 years (SD=7.4, min-max=24-59, median=44). Thirty-three percent (48 teachers) of them were in the 45-49 age group. Of the participants, 42.8% were male and 57.2% were female. Eighty percent were married. Eighty-four percent of the teachers had children and 63.9% of them had two children. The mean number of children was 2.0 (SD=0.7, min-max=1-4, median=2).

Of the participants, 31.0% had graduated from a faculty of education. The dominating professional specialty was class-teaching. Fourty-six percent of the participants had spent 20-29 years in teaching and the mean number of years was 19.4 (SD=8.4, min-max=1-35, median=22).

Of the teachers, 73.6% (106 teachers) who participated in the study had ever smoked and 26.4% had never smoked (Table 2). Of these, 55.7% were current smokers while 44.3% (47 teachers) had given up smoking.

There was a statistically significant relationship between sex and smoking status (Yate's chi-square= 5.01, p=0.025); 83.9% of males and 65.9% of females said that they had ever smoked in their lives (Table 2).

Table 2. Distribution of smoking status of teachers by sex (Ankara, Ergazi Health Center Region, June 2004)

	Smoking status				Total	
	Ever smoked		Never smoked			
Sex	n	%	n	%	n	%
Male	52	83.9	10	16.1	62	43.1
Female	54	65.9	28	34.1	82	56.9
Total	106	73.6	38	26.4	144	100.0

Chi-square= 5.0 SD=1 p= 0.025

Of the participants who still smoked, 88.1% (52 teachers) reported smoking every day. The mean number of cigarettes smoked per day was 13.3 (SD= 8.5, min-max=1-40, median=13). Of the teachers who smoked, 48.2% (27 teachers) were smoking ten or less cigarettes, while 8.9% (5 teachers) were smoking more than 20 cigarettes per day. The average duration of smoking was 17.1 years (SD=9.3, min-max=1-35, median=16). The mean age of first smoking was 21.4 (SD=4.9, min-max=13-38, median=21) and 25.4% (15 teachers) started smoking when they were 18 years old or younger, while 52.6% started smoking between the ages of 19-24.

There was a statistically significant relationship between smoking status and the schools in which the teachers work (Chi-square = 12.6, p = 0.006) (Table 3). The difference was due to high school teachers.

There was a statistically significant relationship between the ages of the teachers and smoking status (Yate's Chi-square=6.6, SD=1, p=0.01). Of the teachers who reported that they were still smoking, almost 43% of the teachers were over the age of 44 and 69.2% of the teachers aged 44 and younger were current smokers (Table 4).

Of the teachers who smoked, 45.6% (26 teachers) had never thought about giving up smoking. Thirteen teachers (22.4%) preferred smoking in the open air, while 46.6% (27 teachers) smoked in the school building. The mean monthly expenditure of the teachers for smoking was 48.2 million TL. (SD=32.4, min-max=5-180, median=45). This was an equivalent of 31.8 US Dollars[19]. Of the participants who smoke, 28.8% (15 teachers) reported that they spend more than 60 million TL per month on cigarettes.

81.4% (48 teachers) of 59 teachers who still smoke gave information about their monthly incomes. The proportion of the monthly smoking expenses to their

Table 3. Distribution of smoking status of the teachers, sorted by school (Ankara, Ergazi Health Center Region, June 2004)

	Smoking status					
	Smoker		Non-smoker		Total	
Schools	n	%	n	%	n	%
Ahmet Hamdi Tanpinar1	13	38.2	21	61.8	34	32.1
Ergazi1	10	43.5	13	56.5	23	21.7
Turkan Azmi Koksoy1	14	66.7	7	33.3	21	19.8
Nermin – Mehmet Cekic2	22	78.6	6	21.4	28	26.4
Total	59	55.7	47	44.3	106	100.0

[1] Elementary School
[2] (Anatolian) High School
Chi-square = 12.55 SD = 3 P = 0.006

incomes averaged to 7% (SD=4%, min-max=7%-25%, median=6%).

The mean age of first smoking among teachers who subsequently quit was 19.4 (SD=5.2, min-max=12-46, median=20). Of these, 51.1% (23 teachers) started to smoke between the ages of 19-24. The average number of cigarettes per day was 15.7 (SD =9.5, min-max=1-40, median=19). Of the participants, 38.1% (16 teachers) had smoked 16-20 cigarettes per day before they gave up smoking. The average number of years of smoking was 15.2 (SD=8.7, min-max=2-34, median=15). Thirty-five percent of the participants (15 teachers), reported that they gave up smoking after less than nine years of smoking.

There was at least one person who smoked in the households of 43.4% (62 teachers) of the teachers who participated in the study. The teachers' husbands/wives (68.8%, 34 teachers) were in the first rank order among the people who smoked in the house. Of the participants, 68.8% (95 teachers) work in a place where people smoke and teachers (98.3%, 59 teachers) were in the first rank among the people who smoked in the workplace.

The disease most commonly related to cigarette smoking by the teachers was lung cancer (98.6%) and the least common was osteoporosis (20.9%). The disease most commonly believed to be unrelated to smoking was AIDS (51.2%) (Table 5).

Of the 144 teachers who participated in the study, 17.4% (25 teachers) have had a disease diagnosed by a doctor and needed medication. Of these diseases, 52.0% (13 teachers) were related to cigarette smoking.

Table 4. Distribution of smoking status of the teachers, according to age (Ankara, Ergazi Health Center Region, June 2004)

	Smoking status					
	Smoker		Non-smoker		Total	
Age	n	%	n	%	n	%
≤44	36	69.2	16	30.8	52	49.1
>44	23	42.6	31	57.4	54	50.9
Total	59	55.7	47	44.3	106	100.0

Chi-square=6.58 SD=1 p=0.01

Table 5. Distribution of the teachers' knowledge of smoking related diseases (Ankara, Ergazi Health Center Region, June 2004)

Diseases		Presence of a relationship between the disease and smoking (%)		
		Present	Absent	Don't know
Smoking related diseases				
Lung cancer	(n=143)	98.6	-	1.4
Larynx cancer	(n=142)	92.3	1.4	6.3
Atherosclerosis	(n=141)	86.5	2.8	10.7
Chronic bronchitis	(n=140)	80.7	2.1	17.2
Osteoporosis	(n=129)	20.9	22.5	56.6
Smoking unrelated diseases				
AIDS	(n=127)	10.2	51.2	38.6
Rheumatic diseases	(n=127)	13.4	40.2	46.4
Psoriasis	(n=128)	7.0	39.9	53.1
Epileptic diseases	(n=125)	9.6	38.4	52.0
Icterus	(n=128)	14.9	36.7	48.4

Of the participants, 46.5% (67 teachers) thought that the occupational group which has the highest smoking rate was drivers; "doctors" and "teachers" followed this with %11.1 and 10.4 %, respectively.

Table 6. Distribution of the teachers' opinions about the definition of "smoking addiction" (Ankara, Ergazi Health Center Region, June 2004)

Definition of smoking addiction	n	%
Smoking > 20 cigarettes/day, regularly	53	36.8
Physical signs appear when no cigarettes are smoked	46	31.9
Smoking at least one cigarette/day, regularly	21	14.6
None of the above is true	11	7.6
Don't know	13	9.1
Total	144	100.0

Of the teachers, 31.9 % (43 teachers) said that age of smoking initiation was 15 years in Turkey. The mean response to the question of age of smoking initiation was 14.6 years (SD=2.5, min-max=2-20, median=15).

Most of the teachers (86.1%, 124 teachers) defined "passive smoking" as "being in the same place with smoking people". 91.7% (133 teachers) of the participants knew that passive smoking is harmful and that the smoke can affect all of the people in the same place.

Of the teachers, 93.1% (135 teachers) knew that "smoking in closed public places" was prohibited and punished with a fine, while the others said that there was no fine (3.4%, 5 teachers) or that there was a prison sentence (2.1%, 3 teachers). Two teachers did not know that there was a law about smoking in Turkey.

Of the teachers who participated in the study, 14.6% (21 teachers) knew that "smoking addiction is defined as "smoking at least one cigarette/day, regularly" (Table 6).

52.8% (76 teachers) of the teachers reported that they would warn students about the hazards of smoking if they witnessed them smoking. Of the teachers, 81.4 % (114 teachers) said that, if they saw their own children smoking, they would talk to them and give them information about the harmful effects of smoking.

Of the participants, 51% (74 teachers) mentioned that if they saw a teacher smoking in a place where he/she could be seen by the students, they would

Table 7. Distribution of the teachers' opinions about some propositions about smoking (Ankara, Ergazi Health Center Region, June 2004)

Propositions about smoking	Definitely Disagree	Disagree	No idea	Agree	Definitely agree
Teachers have enough knowledge about the hazards of smoking (n=141)	12.0	17.0	-	42.6	28.4
Teachers' smoking encourage students' smoking (n=139)	10.8	15.1	2.9	51.1	20.1
Teachers tell students enough about the hazards of smoking (n=138)	10.1	31.2	9.4	37.0	12.3
Students conform to the teachers' warnings about smoking (n=134)	16.4	46.3	9.7	23.9	3.7
The warnings about the hazards of smoking when offered by a smoking teacher is less convincing (n=137)	10.9	8.8	2.9	43.8	33.6
Teachers are sensitive about the students' smoking (n=136)	8.1	14.0	6.6	57.3	14.0
Teachers, through their own efforts, can decrease the rate of smoking among the students, (n=137)	9.5	16.8	8.0	51.8	13.9
Discipline keeps away students from smoking (n=136)	37.5	41.9	4.4	9.6	6.6
Information given by the family keeps the students away from smoking (n=138)	10.1	28.3	8.0	43.5	10.1
Using physical power (slapping, pulling ear) keeps students away from smoking (n=137)	58.4	28.5	2.2	6.5	4.4
Convincing through talking keeps students away from smoking (n=138)	10.9	10.9	6.5	55.1	16.6

Table 8. Distribution of the sex of the teachers according to their opinions about the proposition "Students conform to teachers' warnings about smoking" (Ankara, Ergazi Health Center Region, June 2004)

Sex of the teacher	Opinion about the proposition: "Students conform to teachers' warnings about smoking"							
	Disagree		No idea		Agree		Total	
	n	%	n	%	n	%	n	%
Male	31	51.7	5	8.3	24	40.0	60	44.8
Female	53	71.6	8	10.8	13	17.6	74	55.2
Total	84	62.7	13	9.7	37	27.6	134	100.0

Chi-square = 8.4 SD = 2 p = 0.015

When the group who said "I have no idea" is excluded, the relation is still significant.

(Chi-square = 7.01, p = 0.008)

Table 9. Distribution of the importance of role models for the students in initiating smoking according to the teachers (Ankara, Ergazi Health Center Region, June 2004)

Role model	Importance rank (%)				
	1	2	3	4	5
Friend (n=120)	55.0	25.8	15.0	4.2	-
Parents (n=110)	50.0	34.6	12.7	1.8	0.9
Teachers (n=94)	9.6	22.3	34.0	27.7	6.4
Doctor (n=58)	6.9	1.7	8.6	31.1	51.7
Famous people (movie stars, sportsmen) (n=80)	5.0	23.7	38.8	20.0	12.5

Note: Four teachers said that they had no idea.

warn the teacher not to do this. 42.1% (61 teachers) said they would not intervene, but they would think that it is an inapproriate behaviour.

Of the teachers, 60.6% (86 teachers) thought that their children's teachers' smoking was wrong. Of the 33 teachers who stated why this was wrong, 75.8% said that the teacher would be a negative role model, 21.2% (7 teachers) said that smoking had harmful health effects and 3% (1 teachers) thought that a civilized person shouldn't smoke. Of the teachers, 2.1% (3 teachers) approved of their children's teachers' smoking because they themselves were also smokers. The teachers' opinion on smoking is given in Table 7.

There was a statistically significant relationship between the sex of the teachers and the proposition "Students conform to teachers' warnings about smoking" (Chi-square=8.4, p=0.015). 51.7% (31 teachers) of males and 71.6% (53 teachers) of females thought that students do not conform to teachers' warnings about smoking (Table 8).

Of the participants, 61.8% (89 teachers) said that few students smoked in school. Of the teachers, 51.0% (71 teachers) said that students smoked in places surrounding the school. 27.1% (39 teachers) of the teachers believed that the cause of students' smoking was their friends' influence.

Most of the teachers thought that the two most important role models for the students in initiating smoking were friends (%55.0) and parents (%50.0) (Table 9).

Of the participants, 27% (38 teachers) stated that education should be implemented in the sixth class of elementary school to prevent children from starting to smoke. Of the teachers, 33.3% (47 teachers) said that similar education had been provided at their schools.

Discussion

It was determined that, of the teachers working at elementary and high schools in the Ergazi Health Center Region, 42.8% were males and 57.2% were females. According to the data (2000) of The Ministry National Education, Turkish elementary schools are comprised of 43.8% female teachers and 56.2% male teachers[20]. The mean age of the participants was 42.5 years, which is considered as middle age.

Eighty percent of the teachers were married. In the "Teachers' Profile Research" conducted in 1998 by Rıfat Okçabol and Fatma Gök, it was also found that 80.0% of the teachers were married[21]. The mean period the teachers had spent in teaching was 19.4 years so it could be said that the teachers were experienced in their jobs.

Of the teachers who participated in the study, 73.6% had ever smoked, whereas 55.7% were current smokers. In the study conducted by PİAR (1988), it was determined that the smoking rate was 43% among adults[9]. According to data from various studies in Turkey, smoking prevalance among teachers is 40%-50%[1,22]. In this study, the smoking rate was found to be approximately similar to the results of different studies.

Of the teachers who still smoked, 88.1% said that they smoked every day. According to WHO's definition of smoking addiction, these teachers can be defined as "smoking addicts". Since the percentage of teachers who defined smoking addiction correctly was only 14.6%, it can be said that the number of the teachers who knew that they were smoking addicts was very low.

The mean number of cigarettes smoked was 13.3 and the mean time of smoking was 17.1 years. This data shows that, most of the teachers who smoke are at a risk of developing smoking related chronic diseases.

The mean age of smoking initiation was found to be 21.4 years among the participants and 25.4% of them started to smoke when they were 18 years old or younger whereas 52.6% were between 19-24. According to the 1988 PIAR study in Turkey, 63% of smoking addicts started to smoke before they were eighteen[9]. The study conducted by Bilir et al in 1997 in Ankara (n=2503) showed that the mean age of smoking initiation was 12 for middle school students whereas it was 14 for high school students[1]. It can be said that the age of smoking initiation is progressively decreasing in Turkey. The mean age of smoking initiation of the participants was similar to the results of recent studies.

69.2% of the teachers who are 44 years old or younger and 42.6% of the teachers who are older than 44 years of age, still smoke. According to data of the CDC and other recent studies, the smoking prevalance is higher between 18-44 age group and it decreases after 44 age[23]. This may depend on the increasing rate of smoking related diseases and deaths.

Of the participants 86.1% knew correctly the definition of passive smoking, and 91.7%, the hazards of passive smoking. Of the current smokers, only 22.4% preferred smoking outside, whereas 46.6% of them reported that they smoked in school. Of the participants, 21% reported that they smoke at home or in places where smoking is not forbidden. As a result, it was thought that, although they have the information, the teachers do not behave accordingly.

Although 93.1% of the teachers thought that it was wrong to smoke near the students, teachers are in the first rank among the people who smoke in school (98.3%). It is probable that this contradiction can influence the attitudes and behaviour of the teachers.

According to mortality data of The State Institute of Statistics, in 1990 the first three causes of mortality were smoking-related diseases (heart-vessel diseases, cancer, cerebrovascular diseases). Because it is a cause of death related to smoking and is used in campaigns against smoking, lung cancer was the most known (98.6%) smoking related disease, but most of the teachers (79.1%) did not mark osteoporosis as a disease related to smoking. Perhaps osteoporosis is a disease less known by the public, but it was expected that the teachers should have more knowledge than the public.

Of the participants, 46.5% thought that the occupational group which has the highest smoking rate was "drivers", "doctors" and "teachers" followed this, with a percentage of %11.1 and 10.4%, respectively. According to a study by Bilir et al in 1997 in Ankara, the smoking rate was highest among journalists (63.9%) and teachers were in the second rank with a percentage of 50.8[1]. In the same study, the smoking rate among doctors was found to be 43.9%. In a study by Emri et al. in Bolu, it was determined that 95% of bus drivers smoked[10]. The smoking rate of journalists (2.1%) was less than that of teachers, although it was more in the recent studies.

Of the teachers who participated in the study, 52.8% (76 teachers) reported that they would warn students about the hazards of smoking when they witnessed them smoking. Of the teachers, 81.4% (114 teachers) said that if they saw their own children smoking they would talk to them and give information about the harmful effects of smoking. In such a situation, none of the teachers thought to apply physical violence; this attitude and also the fact that

they make no discrimination between their students and their own children, can be considered a positive attitude.

Most of the participants thought that role models about smoking for students were their friends (55%) and parents (50 %). This result emphasizes that family and peer education is important to preventing smoking. The teachers thought that they ranked third (9.6%) as role models. However, the teachers have much influence on their students, especially at the elementary school level. Therefore, the teachers currently smoking should either give up smoking or avoid smoking in school.

More than half of the teachers were current smokers and almost three quarters of them were ever smokers. Although they underemphasized their importance as role models, they should realize their significant role in preventing their students' smoking initiation. Most of them knew what passive smoking and its harms are. Yet, they continued to smoke in schools and other closed places.

Teachers should be encouraged to quit smoking or, if not, to decrease the number of cigarettes they smoke. They should not smoke in schools and should be educated more about the hazards of smoking and smoking related diseases. They can and should give more information to students about the hazards of smoking and smoking related diseases. Teachers should consider that they have an important role in the education process and they are role models for the students.

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A model for first aid education in community-based disaster preparedness in Istanbul: Mobile Disaster Training Center

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Abstract

This study has been conducted as a part of the Mobile Disaster Training Center (MDTC) Project, which aimed to cope with natural disasters by increasing the local capacity. In this paper the thoughts of the participants were defined about disaster and Applied Basic First Aid Course given in the twelve different locations. The course program included core health perspective elements for first responders and other volunteers. Check-lists were used to learn and performance based assessment was considered.

Participants pointed out that they had encountered an event where first aid was needed, but could not interfere because they had lack of basic skills related to the first aid at the time. Results of this training program showed that the participants' knowledge and skills developed about first aid and increased their self-confidence.

Keywords: Health education, disaster education, community based disaster education, first aid education, earthquake.

Introduction

The United Nations agency for International Strategy for Disaster Reduction (UN/ISDR) has reported that in 2003, 70 thousand people died as a result of natural disasters such as earthquakes, floods and cyclones, and the lives of at least 600 million people were affected in various ways around the world.[1]

At the time of a natural disaster, official rescue teams are obliged to give priority to hospitals, schools, office buildings and hotels, depending on the time of the day. Because of this and other reasons, such specialized teams might be delayed in arriving at residential areas. The crucial factor in saving lives in large natural disasters is the knowledge and skills of the community members, neighbours and kin. In the Mexico City Earthquake (1985) untrained volunteers saved 800 people, but 100 of them died saving others. This is a very high price paid in rescue work, and can be prevented by training[2]. There are other cases where volunteers were critical in providing an urgent response to disasters and helping to reduce the damage. In the 1988 Earthquake in Armenia, 90% of the people dug out of the rubble were saved by survivors rather than professional search and rescue team. In the Turkey Earthquakes (1999) mentioned above, the search and rescue efforts during the first 24 hours were conducted mainly by neighbors, friends and family members.

It is essential to resolve the problems in access to information and training for vulnerable people so that they become aware of the opportunities related to vulnerability reduction[4]. Furthermore, the inhabitants of disaster prone communities will always be the first to respond to a disaster. Training and education are of critical importance for both professional and volunteer workers to update their knowledge and skills needed in pre- and post-

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disaster working. It is important to appreciate the local knowledge and resources and to build on them in order to improve people's capacity to withstand the impact of disasters.

The largest earthquake known in terms of mortality rate in the history of the Turkish Republic had a magnitude of about 8.0, which occurred in 1939 in Erzincan, a large northeastern city, where more than 30 thousand people were killed. The largest known in terms of the population affected and the geographical area involved are the 1999 earthquakes.

The 1999 earthquakes in Turkey clearly destroyed the infrastructure of cities, including the medical system. It was only after the second day of the earthquake that the aid from outside the region was delivered and the rescue teams were able to start work[5,6]. The earthquake and its aftereffects clearly traumatized the population; 1.5 million people became homeless overnight and had to stay in temporary settlements without running water and electricity for days.

Materials and Methods

This study has been conducted as a part of the Mobile Disaster Training Center (MDTC) Project, which aimed at increasing the local capacity to cope with natural disasters by providing on-location training within the framework of community-based disaster training and management. The goals of the project were to provide basic knowledge and skills needed in dealing with disasters, and to inform the community about the work done by official and non-governmental organizations, as well as to promote civil initiatives at the local level.

The Mobile Disaster Training Centers operated in 12 districts of Istanbul. The districts were selected, based on an evaluation of the degree of risk regarding settlement and geographical issues. The project was completed in 6 months (from June – December 2003).

A training tent covering an area of 200 square meters was pitched at each location, which housed seminar and training, movie, children and advertisement stations. In addition to acquiring basic information about natural disasters (such as earthquake, fire, and flood), through applied fire-safety and applied first aid courses; the participants had the opportunity to practice what they learned in various issues in the districts they lived or worked. The training tent of the project was pitched at each location at the beginning of the week, the applied first aid course being carried out at the weekend of the same week.

In this study, the thoughts of the participants about disaster event were assessed by concerning the socio-demographic variables of the participants as to age, sex, education and occupation. We also aimed to assess the progress of participants' performance level of basic skills during the Applied Basic First Aid Course.

The total of the participants was 421 people in the course but three hundred and thirteen participants finished the course. The rest of the participants (108 people) have been taken away from the study. Results were evaluated according to the participants (313 people) who filled out the form and completed the course. A structured interview form was developed to determine the training needs of participants. The participants (313 people) filled out the form to state their knowledge and thoughts on the disaster event. Their performance level of basic skills were also assessed. Chi square test was used to compare the thoughts of the participants about the disaster event according to their socio-demographic characterictics.

Contents of Applied First Aid Courses and Assessment:

Course program included core health perspective elements for first responders for the disaster (eg. local authorities, security workers, fireman, etc.) and other volunteers (teacher, students, housewives, etc.). The course was carried out by two trainers. The course content formed from theoretical sessions (three hours) and practical sessions (about five – six hours). The total number of the participants changed from 6 – 35 people in 12 locations. The maximum number of participants was accepted as 20 in each course. When the number of participants exceeded 20, the course was applied twice on Saturday in the same weekend in some of the locations.

The learning objectives of Applied First Aid Course were; notice the major goals and the underlying principles of first aid; to apply basic nonpharmacological procedures for saving life and preventing further injury until a professional medical aid is provided. The teacher emphasized the correct message and factual knowledge in theoretical session to attain the learning objective. The case

scenarios were used to develop problem solving skills and were used to assess 'know hows' which reflected the ability to apply factual knowledge to different emergency situations.

The purpose of skill training was checking for consciousness, breathing and bleeding, opening the airway, getting medical help, preventing loss of blood shock by watching the key sign and giving the appropriate posture, keeping the victim warm and stabilizing fractures when necessary. Skill learning guides were used to attain the purposes. The key components of the checklist were clearly defined and readily observable. Assessment criterias were developed according to the key components on the learning guideline for each of the skills. Performance based assessment were considered according to the guidelines. Thus, the assessor had to decide whether each component on the list was done/ not done adequately done/inadequately done.

Post-course comments were captured using a written questionnaire on all aspects of the course. The comments contained feedbacks on course organisation, structure, content, and assessment.

Results

Participation in the training programs was voluntary and we evaluated 313 people who finished the Applied First Aid Course. Demographic variables for the participants are presented on Table 1. The majority of the participants, 75.4%, had never received first aid course or disaster training before. Of the participants who had received first aid training, 41.7% pointed out that they had encountered an event where first aid was needed, but could not interfere because they had lack of basic skills related to first aid at the time (55.5%).

Of all the participants, 313 filled out a questionnaire about knowledge and thoughts on the disasters. When the participants were asked how they individually would be impacted by a potential earthquake in Istanbul, 32.7% responded that their homes would be damaged, and 6.5% said their homes would be destroyed, while 6.1% also indicated that they would be injured and 7.5% that they would be killed. Of the 93.9% of all the participants who responded to this question 24.1% answered that they have no idea about this issue. There was a statistically significant difference between males and females in terms of particular opinions regarding the level of potential impact. Females indicated more often than males that they believed their homes would be destroyed (9.4%, 3.4% respectively) and that they would die (10.1%, 4.8% respectively). Males, on the other hand, pointed out more often than females that they have no idea what would happen in a likely Istanbul earthquake (29.7%, 18.8% respectively) (Table 2).

Table 1. The Demographical Variables of the Participants

Variables		n (%)
Sex	Female	156 (49.8)
	Male	157 (50.2)
Age (Group.)*	11-26	81 (25.9)
	27-42	116 (37.1)
	43 and _	73 (23.3)
Education*	Primary School	107 (34.2)
	High School	100 (31.9)
	Higher Educ.	63 (20.1)
Occupation**	Housewife	68 (21.7)
	Employee	59 (18.9)
	Student	40 (12.8)
	Security staff	18 (5.8)
	Worker	18 (5.8)
	Other	46 (14.7)

* 43 people did not answer

** 64 people did not answer

Table 2. Distribution of Opinions of the Participants Regarding to the Impact of Potential Earthquake According to Sex

Opinions of the Participants	Female (%)	Male (%)	Total (%)
My home will be destroyed**	9.4	3.4	6.5
My home will be damaged	32.2	33.1	32.7
My home will be damaged or destroyed and I will be injured	7.4	4.8	6.1
My home will be destroyed and I will be killed	10.1	4.8	7.5
I am scared	3.4	2.8	3.1
I have no idea**	18.8	29.7	24.1
Nothing will happen	4.7	12.4	8.5
Other*	14.1	9.0	11.6
Total	100.0	100.0	100.0

* Anything can happen," "It's God's decree" or "Nothing will happen to me but the city will be paralyzed"

** $p<0.05$

Most of the participants (69.6%) thought that effort done before, during, and after a disaster are all equally important. Those who expressed that the pre-disaster preparation stage is the most crucial were 29.0%, while more than half of the participants (52.5%) said that effort of preparedness done in this area was not sufficient.

The pretest was carried out about first aid to assess what participants know and to focus on their areas of weakness. Table 3. shows the group performance (basic knowledge) of the participants according to the course topics in 12 districts. The results of this assessment and the correct answers were shared with the participants, so that they would become more aware of what their needs were and thus be motivated to learn.

Table 3. Precourse Performance of the Participants According to the Course Topics

Topics of the Course	n*	%**
Major goals of first aid	135	43.9
Vital signs (respiratory, cardiac, nervous)	172	56.0
Bleeding	183	59.6
Burns	156	50.8
Sprain and fractures	203	66.1
Poisoning	96	31.2
Total Group Performance	51.2%	

* total number of correct answers

** total number of correct answers / total number of questions x total number of participants

Skill learning guidelines were used for skill training such as control of bleeding and immobilize bone injuries. At the beginning of the skills trainings the teacher demonstrated the skill from the beginning to the end and explained each step based on the skill learning guideline with the coaching of the teacher. Each of the participants practiced the skill guideline. Personal performance of each of the participants was assessed according to the competency-based approach in accordance with the guidelines Table 4 shows the progress of participants' performance before skill training (novice) and reached competency level at the end of the course. Most of the participants (74.3%) continued skill practices until their performance are competent.

Feedbacks of the participants about the course were mostly positive. The majority of the participants perceived the programme to be well structured. The majority of participants said that the courses were realistic and applications were useful, and were motivated for further training. The participants asserted that their expectations were met, and that their self-confidence was increased. The participants requested that the program consisting of further knowledge; especially, on first aid, as well as more applied topics such as life support should be repeated.

Table 4. Pre and Post Performance of the Participants in Different Skills level

Skills (number of steps in the guideline)	Performance	
	Novice (before skill training)	Intermediate (end of the course)
First Aid Priorities (7)	45%	85%
Checking for vital sign (12)	60%	85%
Getting medical help (5)	65%	100%
Opening the airway (5)	65%	100%
Preventing loss of blood (9)	60%	85%
Intervention on shock casualty (10)	55%	85%
Stabilizing fractures when necessary (14)	65%	85%

Discussion

Programs supported by powerful campaigns that would help vulnerable population to identify risk behaviours, and understand their own needs with regard to hazard reduction and prevention without having to rely on external aid are needed. The MDTC project assumed that it is crucial for inhabitants who live and work in the area of disester to be aware of work done for disaster preparedness by official agencies, local governments and NGOs, to participate in voluntary activities, and organize around their own living areas.

While the devastating effect of disasters on the lives of the affected population traumatized for extended periods of time, the damage they cause to the infrastructure of the region takes a heavy toll on the economy of the country. Many Turkish people are still struggling with problems such as unemployment, physical disabilities, and psychological trauma, because of the earthquakes they have been through in the last few years. The participants of our study have psychological sensitivity for risk in a potential earthquake in their living area. It is noteworthy that over half of project participants

believed that disaster preparedness is insufficient and that their homes would be destroyed or damaged, they and/or their friends and relatives would be killed or injured. The emotional state of the participants who said they did not have any idea about a potential earthquake or believed what follows would be "God's decree" should be regarded as controversial. We found that the female participants were more anxious than male participants on the level of potential earthquake impact that was related with fear of destroying and death. Housewives participated as majority group right along with the other volunteers.

The community-based disaster preparedness projects should appreciate the local knowledge and resources, integrate the preparation work into daily activities, and aim to enhance the knowledge and skills of the volunteers who are in interaction with the community. Well-trained volunteers are crucial for disaster preparedness as well as for assisting the local community to help reduce the loss at the time of disasters[7,8]. In this regard it is noteworthy that the participants of Applied First Aid course have important social roles in their habitat, such as local authorities, security workers, teachers, students, engineers, and technicians.

In Turkey, especially after the 1999 earthquake, an effort was made to extend disaster preparedness and first aid training programs, mainly by the Turkish Civil Defense General Director and Turkish Red Crescent Society. However, training sessions were offered during work hours and primarily to the priority personnel and it consisted of 5-9 days long detailed programs, which limited voluntary participation. The "Applied Basic First Aid" course provided by MDTC project were offered during weekends, which increased participation in general, and were open to public, which made it possible for people from a variety of vocational backgrounds to acquire basic knowledge and skills in the topics covered.

It is noteworthy that although participants had prior training, they indicated that they had not been able to perform the necessary skills in case of emergency due to lack of skill training.

Research has shown that evaluation of an emergency situation and confidence in one's ability to deal with the emergency are the psychological factors that start the first aid behavior[9]. It is known that self-confidence increases due to participants' knowledge and experience. Theoretical first aid education provides awareness about different situations that may occur in emergency situations, but without skills training and coaching, this may produce personal confidence anxiety. In this regard, it is important that the feedbacks of the participants at the end of training sessions pointed out a reduction in anxiety for lack of experience.

Finally, training provided as part of the project intended to develop the local volunteers' knowledge and skills in the areas of first aid. Training projects by volunteers and professional teams are key factors to realize local participation in disaster preparedness, community-based disaster management and emergency organization in a city like Istanbul, prone to earthquakes. Non-governmental organizations should build up opportunities for coordination and cooperation among various organizations including public and community organizations in preparing for probable disasters in the future.

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Physical examination on the children working or living on the street in Mersin, Turkey

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Abstract

Background: The purpose of this study was the evaluation of the findings obtained from the overall physical examination of the children living or working on the streets.

Methods: This study was conducted under a Project, titled "Situation of children working or living in Mersin-2002", which had many components serving to many objectives. The data was collected by a mobile health vehicle in April and October 2002.

Results: 916 children, including 896 boys (97.8%) participated in the study. Average age of the children was 11.8±2.2. According to the results of the overall physical examination, at least one health problem was detected in 706 children (77.1%). The most frequent ones were respectively tooth decay (71.5%), growth retardation (15.2%), infection of upper respiratory system (10.4%), acute or chronic otitis media (7.8%) and cryptorchidism (7.1%).

Conclusions: Health problems, which are caused by malnutrition and insufficient mouth care, are dominant in the children living or working on the streets.

Key words: Street children, working children, street youth, physical examination

Introduction

Migration movements, which have been experienced from rural areas to urban areas in Turkey for the last 30- 40 years, have created an unhealthy urbanization. Today there are interspaces areas between cultures, which are not totally urban culture, especially around big cities. These families who settled around the slum areas are not in a situation to continue their life style, which they led in their villages or to meet the requirements of urban life style[1,2].

The families with financial constraints in the slum areas let their children work on streets in order to finance their lives. The children are engaged in unqualified jobs, such as shoe painting, selling chewing gums, handkerchiefs, simit (a kind of pastry) and roses and waste picking. While the children from families with slightly better financial status continue their education and work on the streets, children from families with serious financial constraints work on the streets the whole day[1-7]. These children face with various health risks (violence, traffic accident, drug dependence, infectious diseases…), which vary depending on what they do. In addition, they are subject to a serious nutrition problem as they feed with simit (a kind of pastry) or sandwiches[3]. Therefore growth of these children is negatively affected and they become sensitive against many diseases.

Researchers studying on the children living or working on streets do not provide sufficient information on the health condition of these children while they generally concentrate on their socio-economical characteristics. In addition, some reports and studies concerning the children working or living on streets state that main health problems diagnosed in these children are growth and development retardation, dermatologic diseases and upper respiratory infections and teeth diseases[3,4,6,8,9,10].

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There are very few studies focusing on the health conditions of these children. For this reason, it was aimed that overall health examinations including anthropological and physical examination would be made on these children under the framework of a multiple-objectives project titled "Situation of children working or living on streets in Mersin city". An article titled 'Socio-demographic characteristics and lives of children working or living on the streets of Mersin, Turkey' was written under this project and was published.[11]

Methods

"Situation of children working or living on streets in Mersin" project was conducted through the cooperation between Department of Public Health of Medicine School of Mersin University and Mersin Provincial Directorate of Social Services and Child Organization (SSCO) in Mersin in April - September 2002. Mersin city is located on the Mediterranean coast of Turkey. Its population is 759 785 and it is the 10th largest city in the country. Commercially it is an important harbor city and it is economically well developed.

The children working or living on streets in the centre of Mersin were determined as the universe of this study. In respect to the study's universe; although there are 1300 children working and living on streets in Mersin city based on the records of SSCO, the exact number of children living on streets and the children working on streets was not known. Thus, it was decided that all detected children would be included in the study, instead of conducting the study with a sample. These children were working or living in bus terminals, big parks, market halls, market places and crowded streets where state institutions are located.

Data were collected by a questionnaire including questions that refer to the structure and social security of families. In addition, questions referring to the number of sisters, brothers of the concerned child, whether he lives on streets, the accidents he had on streets were included in this questionnaire. Initially a pilot study was performed on 10 children and the necessary modifications were made on the questionnaire based on its results.

Five doctors from the Department of Public Health of the Faculty of Medicine of the Mersin University and one doctor from Mersin Provincial Directorate of Social Services and Child Organization were actively involved in the task of data- collection. A mobile medical vehicle provided by the Municipality of a Sub-Province traveled on the streets where working children were more intensive, for 2 or 3 days per week between 08:00-17:00. After the children working or living on streets were informed on the study, those who accepted to participate in the study were invited into the vehicle one by one for interview. Data forms were filled in by using face to face question-answer technique. Then systemic physical examination was performed and their weights and heights were measured. Nine hundred and fifty nine children were contacted for this study. Nine hundred and sixteen of them (95.5%) accepted to participate in the study.

Definitive statistics were used in the summarization of data and χ^2 significance test was used in the comparison of the variables.

Following definitions were used in the study; [6,7,12,13].

The child working on streets was defined as the child, who works on streets for the purpose of contributing to the family budget, but goes back to his home and maintains his/her relationship with his/her parents.

The child living on streets was defined as the child who has cut his relationship with his family or sees his family very rarely and sleeps on streets.

The underweight child was defined as weight-for-age <3% percentile according to NCHS/WHO international reference data for the weight and height of children.

The short stature child was defined as height-for-age <3% percentile according to NCHS/WHO international reference data for the weight and height of children.

The child with growth retardation was defined as the child with underweight or short stature.

Results

The number of children who participated in the study was 916. Average age of the children was 11.8+2.2 years. Eight hundred and ninety six (97.8%) of them were boys, 20 (2.0%) of them were girls, 818 (89.3%) of whom were working on streets, 84 (1.9%) of whom were partially living on streets and 7 (0.8%) of whom were living on streets.

As a result of the overall physical examination, it was reported that 706 of the children (77.1%) had at least one health problem. Decayed tooth was the

mostly seen health problem. Seventy one point five percent of the children participating in the study had at least one decayed tooth (Table 1). This rate was 80.1% and 87.7% for the children picking waste and for those under the age of 10 respectively; and it was higher than the rates of other children (χ^2 =19.5, sd=2, p<0.01) (χ^2 =22.2, sd=2, p<0.01).

In 10.9% of the children short stature and in 9.5% underweight were detected. Fifteen percent of the children had short stature or underweight (growth retardation) (Table 1). Growth retardation frequency among children aged above 10 was higher than the children aged below 10 and this was statistically significant (p<0.01, Table 2).

The other health problems most determined in the physical examination were wound scar (13.7%), upper respiratory system infection (10.4%), acute otitis media (4.6%), pyoderma (4.1%), dermatit (3.4%), mycosis (3.4%), cryptorchidism (3.5%), chronic otitis media (3.1%), pediculosis capitis (30.0% in girls, 2.0% in boys and 2.6% in total) and violence sign (2.2%). Other detected health problems are seen in Table 1.

Table 1. Physical examination of the children working or living on the street

			n	%
Tooth decay			655	71.5
Growth retardation;	Height for age	< 3% percentile	100	10.9
	Weight for age	< 3% percentile	87	9.5
	Height or weight for age	< 3% percentile	139	15.2
Ear;	Earwax		153	16.8
	Acute otitis media		42	4.6
	Chronic otitis media		29	3.1
	Other		4	0.4
Eye;	Conjunctivitis		16	1.8
	Strabismus		8	0.9
	Other		13	1.3
Respiratory system;	Upper respiratory system infection		95	10.4
	Pneumonia		7	0.8
Cardio vascular system;	Cardiac murmur		11	1.2
	Rhythm anomaly		1	0.1
Gastro intestinal system;	Hepatomegaly		4	0.4
	Umbilical hernia		1	0.1
Skin;	Wound scar		126	13.7
	Violence sign		29	3.2
	Pyoderma		38	4.1
	Dermatitis		31	3.4
	Mycosis		31	3.4
	Pediculosis capitis		24	2.6
	Scabies		12	1.3
	Other		6	0.7
[1]Urogenital system;	Cryptorchidism		31	3.5
	Inguinal hernia		10	1.1
	Hydrocele		5	0.6
	Varicocele		5	0.6
	Hypospadias		3	0.2

[1] Percentages were calculated on men (896) due to the fact that no urogenital problems were detected in the girls.

Table 2. Distribution of growth retardation according to age group of the children

Age group	Growth retardation					
	Yes[1]		No		Total	
	n	%*	n	%*	n	%**
< 10	14	9.6	132	90.4	146	16.0
10-14	95	14.0	585	86.0	680	74.2
> 14	31	33.3	60	66.7	90	9.8
Total %**	139	15.2	777	84.8	916	100.0

[1] Height or weight for age < 3% percentile

χ^2 = 27.36, df=2, p<0.001

* Row %

** Column %

Medication or prescription was given to 61 (8.6%) of 706 children who were diagnosed with at least one health problem. Eighteen children (2.6%) were referred to the State hospital for advanced diagnosis and treatment. Three children with cryptorchidism were operated. Six hundred and twenty seven children (88.8%) were recommended in respect to their diseases.

Discussion

While Ayaya et al.[20] report that the prevalence of low weight in the children living and working on streets is respectively 55.3% and 27.7% and prevalence of short stature is 44.7%, 17.4%, Gross et al.[14] report that 52% of the children living or working on streets are of short stature and 17% of them are of low-weight. There is no study on health status of the children working or living on streets in the Turkish literature. Furthermore, in a large-scale study performed in normal population in our country, it was stated that the rate of short stature in children is 9.1% and the rate of low weight is 5.2%[15]. In our study, it was detected that 10.97% of the children were of short stature, 9.5% were of underweight and 15.2% were suffering from growth retardation. When compared to the rates obtained in the studies conducted in other countries, it can be seen that growth retardation rate is lower in our country while this rate of growth retardation is 2-3 times higher than it is in other children in our country. The rate of growth retardation is high in the children living or working on the streets is an expected result; as the children who work on the streets are subject to malnutrition due to the financial status of their families[1-8].

In our study, growth retardation rate was higher in children aged above 10. The studies in the literature report that children generally start to work on streets after the age of 10[3-6,16,17]. Therefore, the fact that the children aged under 10 staying with their families at home might have positive impact on their health. Adolescence age starts after age 10 and they need more nutrition at these ages also but, they can not eat enough food on the streets.

In a study with large participation which reflects different regions in our country, Saydam et al.[18] report that decayed tooth prevalence in the children aged between 8, 10 and 14 were respectively 66.5%, 72.3% and 89.1%. Eronat et al.[19] report that this rate is 86.6% in children aged between 8-13. In our study prevalence of decayed tooth is 71.5%. It is seen that this rate is lower than that of the children who does not work or live on the streets. Although there is no data which explain the reason for this, it is known that tooth decay is a common health problem in children in our country.

As it is in the children of other age groups and society sections, prevalence of upper respiratory system infections is very high in the children living or working on the streets. Ayaya et al.[20] report that 17.0% of the children living on the streets and 2.6% of the children working on the streets suffer from respiratory system infections. Page et al.[21] state that 9.4% of the homeless children suffer from respiratory system infections and 10.8% suffer from otitis media. Rew[22] reports that the risk of respiratory system infection is very high for these children as they live in crowds and are subject to malnutrition. Upper respiratory system infection (URSI) was diagnosed in 10.4% of the children participating to our study; acute or chronic otitis media was diagnosed in 7.7%.

In some studies conducted on street children, it is reported that these children are exposed to physical violence and accidents more than the other children[4,6,22]. In their study, Ayaya et al.[20] report that there is incision scar or skin bruises on 19% of the street children. In our study the rate of incision scar was 13.7%, which was lower than the one found by Ayaya. In addition, the rate of violence sign (smoke burn, purple spot, etc.) was 3.2%, which is a result different than that of Ayaya. No data, which could be used in order to compare the rates of incision scar and violence signs of the children who do not live or work on streets, were obtained.

Pediculosis capititis were found in 2.6% of the children. In a study conducted by Kokturk et al.[23] in school age children in Mersin, prevalence of pediculosis capititis was found to be 6.8% (13.3% in girls and 1.1% in boys). This rate seems to be higher than the prevalence found in our study. However we believe in the necessity of evaluating the rates for girls and the rate for boys separately due to the fact that nearly half of the participant children in Kokturk's study were girls and that only 2% of the children participating to our study are girls. From this perspective, it can be seen that the prevalence of pediculosis capititis is 30.0% in girls and 2.0% in boys and this is two folds of the rates obtained in the previous study.

In our study, the prevalence of some eye and skin disorders such as conjunctivitis, pioderma, dermatitis, mycosis was very high. It is thought that these disorders are closely related to the fact that they work and live under unsanitary conditions.

It is known that the prevalence of cryptorchidism is 2.5% and the prevalence of shypospadias is 0.2% in our country[15]. The prevalence of cryptorchidism 3.5%, which was found in our study, was higher than the one found in the study conducted in our country and the prevalence of hypospadias (0.2%) was the same. The reason behind the high cryptorchidism in these children is the insufficient subject - matter knowledge and care of the parents and the fact that they live out of the supervision of their parents. Operations of 3 children who were diagnosed with cryptorchidism during the study were performed in the state hospital.

As a conclusion, malnutrition and insufficient using of the health care services are the main causes of the health problems found in the children working or living on the streets. It is necessary to solve the financial problems of the families in order to improve their problem of malnutrition. Therefore the parents of the children should be provided with a job. School expenses of the children should be met by the state and their education should be followed closely. In order to ensure that these children benefit from the health care services more, health costs of their parents should be taken under the social security network financed by the state.

Constraints of the study; i) as the number of the children working or living on the streets was not exactly known in Mersin city, sampling could not be performed for the children to who participate to the study group, the results of this study can not be generalized to the all street children in Mersin ii) due to lack of vehicle, the study could not be performed on streets and data could not be obtained after 17.00. Particularly, the last constraint may have prevented us to reach the children living on streets.

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Health and safety risks associated with waste picking

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This article discusses the brief "Curriculum Vitae" of some waste pickers in Istanbul.

Waste picking is the extraction of recyclable and reusable materials obtained from mixed waste and it is an informal sector. The waste pickers collect materials when they have been discarded as waste and add value to them by sorting, cleaning, altering the physical shape to facilitate transport or by aggregating materials[1] into a commercially viable quantity.

Specific socio-economic conditions including rapid population growth, migration to urban areas, lack of sufficient funds and affordable services and generally a low-skilled labour force prevail in many developing countries. In most developing countries, recuperation and recycling takes place at all levels of society. Street waste pickers are only the most visible among many who benefit from such activities. Informal recycling occurs in developing countries because of low levels of economic development. Poor wages and low prices for products and services create viable profit margins from collecting and selling secondary raw materials. If alternative employment opportunities and associated wages were higher, waste picking would be less attractive financially.

This informal sector is characterised by small-scale, labour-intensive, largely unregulated and unregistered, low-technology manufacturing or provision of services[2]. Informal sector entrepreneurs or enterprises do not pay taxes, have no trading license and are not included in social welfare or government insurance schemes[3]. Informal recycling has traditionally been practised by outcasts and marginal groups in developing countries such as rural migrants and immigrants and members of some minorities. This labour-intensive, lowtechnology, low-paid, unrecorded and unregulated work is often completed by individuals or family groups.

Although waste pickers are not necessarily the very poorest in society, their income is very low due to their low position in the trade hierarchy for recycled materials[4]. Poor living conditions, limited access to facilities and infrastructure, no provision of urban services such as water supply and sewerage and absence of social safety networks are typical of waste picker communities.

Health and safety risks associated with informal recycling are occupational health risks posed to waste pickers and community health risks posed to the related community or general public[1,2]. Despite the health and social problems associated with informal waste recycling it provides some social and significant economic benefits. It provides employment and a livelihood for impoverished, marginalised and vulnerable individuals or social groups[4]. Despite the particularly adverse working conditions associated with waste pickers, it is important to recognise that it does allow those involved to survive and be employed in regions that often have high unemployment.

Although in many cities waste picking from municipal garbage dumps is illegal, thousands of people in developing country cities depend on recycling materials from waste for their livelihoods.

Method

This descriptive study was carried out in Kadikoy and Umraniye, which are two different districts of Istanbul. The study sample consisted of both males and females in all age ranges who worked as waste pickers at the time of the study. The inclusion criteria for the study included the following: The participant must: (1) be waste picker and (2) have been provided with oral informed consent.

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All 128 interviews were conducted by the research team in a two weeks period during April 2006. Data were collected with a structured questionnaire applied face-to-face. The questionnaire used for data collection included demographic and socio-economic information as well as information on waste pickers' health. In order to understand the present health status of waste pickers in the study population, we used three types of questions: (1) asking each individual how frequently they come in contact with different disease vectors and other risk factors related to their work, (2) asking each individual whether he or she had experienced any health problems during the last six months, (3) asking each respondent to rate his or her health status at the time of the interview in comparison to one year before.

All interviewed waste pickers were informed about health risks related to their work and about Hepatitis B and tetanus vaccination which are free of charge in the primary health care centers.They were oriented to the nearest primary health care center for Hepatitis B and tetanus vaccination, and given gloves at the end of the interview.

Limitations

There are two limitations which need to be carefully considered when conclusions are drawn from the results presented. As we did not know the exact number of waste pickers in the study area we could focus only on the waste pickers that we could reach in a two weeks period. Although none of the waste pickers rejected in participating into the interview; this was an important limitation. The second limitation may be how participants viewed the research team. Knowing that the members of the research team were medical doctors or medical students could have influenced their responses to questions especially about their health status or using protective clothing like gloves.

General Findings

A total of 128 waste pickers were interviewed in this study; only 5 (3.1%) of them were women. The median age of the study sample was 22.0 (min 10, max 56). Almost eleven percent of them had never attended to school, 29.7% had education for 1 to 3 years, 55.5% had education for 4 to 8 years and four of them were graduated from high school. Seventy-six (59.4%) of the entire samples had never been married; 63.2 % of them started waste picking under the age of 20. Median age of first waste picking was 17.0 (min 7, max 50).

Fifty-four (42.2%) of them did not have any health insurance; while 71 persons (55.5%) had green health card. Most of the waste pickers (93%) were immigrants to Istanbul from different parts of the country; 65.5 % (n=78) of the immigrants were from the South-East Anatolian region while 15.1% (n=18) of them were from the East Anatolian region of Turkey. The median immigration time to Istanbul was 48.0 months (2 weeks-420 month).

68% of the waste pickers lived in places segregated for them near the place where the wastes were stored. The owner of the store provided them with a place for sleeping and they had to sell the recyclable waste to the owner of the store. Some of them permitted us see the places where they slept. Their living conditions did not befit to human state.

The waste pickers worked long hours and long days in a week. Almost 90 % of waste pickers work seven days a week; The distribution of mean hours worked per day is 11.23 (sd: 3.17 hours). Despite the hard working conditions and long working time average income achieved by waste pickers was less than 20 YTL/day.

More than one third of the waste is collected by naked hands. Reason of not using protective gloves was stated as "I do not mix the garbage much". Although they deal with garbage, their work attire and causal attire were usually the same. Most waste pickers did not launder their attires, they just threw them when they find some "cleaner" ones from garbage and wore these until they got "dirty enough".

We noticed that we were worried about our own safety at the beginning of the study and we had some prejudices against them. During the study we learned that their fears are similar to other peoples' fears living in Istanbul. More than half of them feel themselves unsafe while working. They feel themselves unsafe because of glue-sniffing people, drunk people or risk of a traffic accident. Some of the expressions about why they feel unsafe during waste picking were as follows:

"We are working at nights. It is Istanbul, anything can happen. Especially at night, there are many types of people on the streets. There are people who drink, there are glue-sniffing people. There is a wide variety of people in this city"

"We are working on the streets. We are mixing garbages. There can be everything in the garbages. There can even be a bomb within the garbage. Glue-sniffing people walk all around the streets. We are afraid."

"Nights are times for the burglars. I have seen many. If they became aware of that you have seen them they tangle with you. At nights there are glue-sniffing people, They threaten with a drawn knife and want us to give them money"

Exposure to broken glass, sharp metal edges, needles, feces, blood, and stray animals is very common as we could guess before the study. Being driven away from the garbage was stated as a problem by many waste pickers. Nearly one fifth of all were exposed to physical violence by other people during their work.

"To be in contempt by other people" was the third disliked aspect of their job followed by waste picking being "unhealthy" and a " tiring" job.

More than half of the waste pickers reported that they have symptoms related to musculoskeletal system during the past six months (pain in joints 43.0%, low back pain 50.8%, neck pain 63.3%, and shoulder pain 44.5%). The symptoms related to respiratory system were also frequent: cough 44.5%, night sweats 35.9% and shortness of breath 25.0%. One third of them reported that they have had disuria in the past six months.

39.8% have dyspeptic complaints (burning and pain in the stomach), 18.8% have diarrhea. Only half of them reported cut (50.0%) and bruise (47.7%) as a health problem of the skin. We believe that this can be due to the reason that cut and bruises were not considered health problems by most of the waste pickers, but rather accidental occurrences that heal easily and quickly. One fifth of them reported rash, hot irritated skin as a symptom; 42.2% have had itching, redness and irritation of eyes.

They believe that they are marginalized, and for no more marginalization few of them complained about Scabies (6.3%) and head lice (7.8%).

More than one third defines their own health status as "bad". The rest "thanks God for their health".

Although they "thank God" because they are "healthy" and "can work", they declare that their health is deteriorating when compared to previous years. Most believe that the symptoms are totally/partly related with their working and living conditions.

We inquired about the job they imagined if they did not have to be a waste picker and asked : "if you have had a chance for another job other than waste picking, what would you prefer for working?" Almost all of them reported that they can work in any status which is simply "clean" and "not be in contempt by other people". Cook, waiter, construction worker, cleaner at someone's house are the most considered jobs by the waste pickers.

Waste picking was often the last resort for them. People who have been involved in waste picking have chosen this work because they face extremely limited options. They have to live and most of them have responsibilities to send money to their families who are living in their native regions. One fourth of the migrated waste pickers were unemployed before they came to İstanbul. More than half of them were shepherds or involved in agriculture and livestock. One advantage of waste picking, which was listed by waste pickers, was that after a day of picking the individual could return home with cash in hand.

Conclusion

Waste pickers are living in our community; however, there are very few studies on the subject in Turkey. Researches have mostly gone into the role of waste pickers in the overall integrated waste management strategy in cities in developing countries. Attention is generally paid only on the physical and environmental benefits of this operation. Although the health impacts of waste picking have not been ignored in general, they are underrepresented.

In this descriptive study we tried to identify the principle health problems that waste pickers encounter in two districts of Istanbul. We tried to address the most important aspects of waste picker's health, the socio-economic environment in order to provide some minor guidance towards establishment of goals, priorities and strategies to address health problems amongst this vulnerable population. Attention must be paid to this crucial component of public health, both for the sake of waste pickers' health and that of their families', and for the health of the population at large.

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