Mental Health and Nutritional Status Among the Adult Serbian Minority in Kosovo

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Since the beginning of the North Atlantic Treaty Organization intervention in Kosovo in June 1999, few objective data have been available on relevant health indicators for the Serbian ethnic minority in Kosovo.

Objective To determine the prevalence of undernutrition among Serbian adults aged 60 years or older and psychiatric morbidity among the adult Serbian population in Kosovo.

Design, Setting, and Participants A systematic random sample survey of 212 households was conducted between September 27 and October 2, 1999, in Pristina, the capital city, and in 10 towns in the rural municipality of Gnjilane in Kosovo. Of the 212 households surveyed, 204 adults aged 15 years or older completed the General Health Questionnaire-28 (GHQ-28) and anthropometric measurements were taken for 98 adults aged 60 years or older and for a comparison group of 51 adults aged 18 to 59 years.

Main Outcome Measures Body mass index of less than 18.5 kg/m² in older adults; nonspecific psychiatric morbidity among adults; and self-reported use of health care services, access to food rations, and primary sources of prewar and postwar income.

Results Undernutrition was found in 11.2% (95% confidence interval [CI], 5.7%-19.2%) of Serbian adults aged 60 years or older compared with 2.0% (95% CI, 0.1%-11.8%) of Serbian adults aged 18 to 59 years. The mean (SE) total score for the GHQ-28 was 13.0 (0.52). In a comparison of the GHQ-28 scores of the Serbian adults with the Kosovar Albanian adults (data from a recent survey), the mean (SE) score adjusted for age and sex was 12.8 (0.52) vs 11.1 (0.58); P=.03, respectively. The GHQ-28 scores were also higher for the Serbians in the subcategories of social dysfunction (2.8 [0.17] vs 2.2 [0.13]; P=.008) and severe depression (1.9 [0.15] vs 0.9 [0.09]; P<.001), respectively. Serbian women and persons living alone or in small family units were more prone to psychiatric morbidity. Of the 141 respondents reporting the need for health care services, 83 (57.6%) reported not obtaining such services; 204 of 212 (96.2%) households were on a food distribution list. The majority of prewar income came from government jobs compared with farming and humanitarian aid for postwar income.

Conclusions The undernutrition of older Serbian adults in Kosovo should be monitored. The high prevalence of symptoms of social dysfunction and severe depression suggest the need for implementation of mental health programs in the Serbian community.

See also pp 569 and 615.
Mental and Nutritional Health of Serbians in Kosovo

Serbian populations surrounded by Albanian majority zones, has been of particular concern because many in these communities are old and infirm. For many of these communities, access to humanitarian services such as medical care and food aid, as well as access to markets and agricultural lands, has been limited because of restrictions on movement. Nutritional indices in the older adults and psychiatric morbidity were therefore thought to be of more relevance in this population than standard indicators of population vulnerability in complex emergencies in developing countries. These standard indicators include acute malnutrition prevalence among children younger than 5 years and communicable disease incidence rates. To obtain a broad overview of the health of the Serbian minority in Kosovo, 2 international humanitarian organizations, the International Rescue Committee and Action Against Hunger, in collaboration with the Centers for Disease Control and Prevention, surveyed Serbians in Pristina, the capital, and in the Gnjilane enclaves in Kosovo in September and October 1999.

METHODS

During September 27 through October 2, 1999, we surveyed a systematic random sample of Serbian residential areas in Pristina and in 10 towns in the rural municipality of Gnjilane, including the town of Gnjilane. These 2 areas were considered representative of other cities and village enclaves throughout Kosovo. Pristina and Gnjilane cities are urban areas in which security was poor for the Serbian minority but which were still accessible to the international community. The villages in Gnjilane municipality are rural villages that vary in their degree of insecurity. In these areas, a small number of suitably qualified Serbian survey staff was available and willing to participate. Difficulty recruiting Serbian staff was a limiting factor for the humanitarian agencies seeking to conduct assessments and provide assistance to Serbian communities in most regions of Kosovo. Risks were considerable for any Serbians traveling in Kosovo. In Gnjilane, teams were composed of 2 to 3 Serbian interviewers, and in Pristina, teams had at least 1 person fluent in the Serbian language. Because of security concerns, an international staff member always accompanied each of the 4 survey teams. A strict 4 PM curfew was imposed. All teams underwent a 1-day training program before the survey began.

Reliable population figures were difficult to obtain because of the substantial emigration occurring before and during the period of the survey and the sensitivity of gathering any type of demographic information. Using figures derived from food distribution lists compiled by Action Against Hunger, we estimated the Serbian population in Pristina to be 1200. We estimated the Serbian population in the Gnjilane municipality to be 15000, using figures compiled by the United Nations High Commissioner for Refugees and the International Rescue Committee. In Gnjilane municipality, we sampled villages in which the Serbian population numbered at least 500 people. We were not able to visit Cernica, a mixed Albanian-Serbian village with approximately 100 Serbian households, because of interethnic violence during the week of the survey.

The primary objective of the survey was to estimate the prevalence of undernutrition among the older adults, whom we defined as people aged 60 years or older. Undernutrition was defined as a body mass index (BMI) of less than 18.5 kg/m². Assuming a prevalence of undernutrition of 10% in this age group, we required a sample of 138 older adults to obtain an estimate with 95% confidence. Sampling was based on the estimated proportion of older adults in families in the population sampling frame. From the mean family size and estimated population age distributions for each area, we estimated that 40 of the estimated 400 remaining Serbian households in Pristina and 200 of the estimated 2000 households in Gnjilane municipality were required to reach our sample size.

A secondary objective of the survey was to assess the level of psychiatric morbidity in the Serbian population for comparison with a similar survey conducted among ethnic Albanians. Assuming a level of nonspecific psychiatric morbidity of 20%, the above sample size was sufficient to obtain an estimate with 95% confidence. One in every 10 households in both areas was sampled.

We obtained maps of major areas with concentrated Serbian populations from the Kosovo force, the international peacekeeping force working alongside the UN civil administration. For the smaller villages, the survey teams marked the maps themselves by marking individual houses in consultation with village leaders. Serbian houses or apartments were marked on the maps, and beginning with a number randomly selected between 1 and 10, every 10th residence was surveyed. We defined a household as people living in the same residence and sharing meals. In each residence, a trained interpreter administered the questionnaire to the head of the household or to another adult living in that household. All questions were posed in the Serbian language. If no adult members of the household were available or if that member refused to participate, the next house in that direction was chosen. Because of the curfew, it was not always possible to return to houses in which household members were absent.

As this survey was a program assessment, the objective of which was not primarily research, formal institutional review board clearance from the Centers for Disease Control and Prevention was not required. The protocol was approved by the medical director of International Rescue Committee and by Serbian community leaders. All participants gave verbal informed consent.

The household data collection form contained 4 sections comprising basic demographic characteristics, nutritional anthropometry, psychological morbidity, and access to humanitarian services. In the demographic section, a series of structured questions was used to determine the number of family members present in the household in March

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Between March and October 1999, JAMA, 580 kg (based on the mean weight of a
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remove shoes but not all clothing, and
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**Table 1. Comparison of Demographic Characteristics of the Serbian Population in Kosovo Between March and October 1999**

<table>
<thead>
<tr>
<th>Family Members Remaining in Kosovo in March 1999 (n = 1010)</th>
<th>Family Members Remaining in Kosovo in March 1999 (n = 812)</th>
<th>Family Members Relocated Between March and October 1999 (n = 195)</th>
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<tbody>
<tr>
<td>Mean age, y</td>
<td></td>
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<td>Male:female ratio</td>
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*Two persons died and 1 was missing at the time of the survey.

1999 (prior to the NATO bombard-
ment), and the current whereabouts of
each of those members. Respondents
were asked to list the major reason why
relatives had left their homes in Kosovo.
All questionnaires were translated into
the Serbian language by 2 bilingual phy-
sicians, reviewed by the Serbian team
leader for International Rescue Com-
mittee in Gnjilane, as well as members
of the interview team, and back-
translated into English to check the ac-
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were not included in the final survey. In
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available were adapted to the Serbian
language.

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We assessed the effect of certain inde-
pendent variables by using analysis of
variance (ANOVA) and $P$ values were
computed using $F$ statistics. Confi-
dence intervals (CIs) were derived in
the usual manner using the mean test
statistic multiplied by the SE. Age and
sex adjustments and regression analy-
sis were performed using SAS version
6.12 (SAS Institute Inc, Cary, NC),
while the rest of the analysis was per-
formed with EPI Info version 6.4b (Cen-
ters for Disease Control and Prevent-
ation, Atlanta, Ga).

**RESULTS**
We surveyed 212 of the anticipated
240 households. Security incidents at
the time of the survey made 1 village
inaccessible, the strict curfew imposed
by the Kosovo force prevented survey
teams from returning to some houses,
and approximately 20 households
(9.4%) refused to participate. The
mean number of people per household
was 4.8 in March 1999 and 3.8 during
the time of our survey in September to
October 1999. The total number of
household members living in Kosovo
at the time of the survey was 812; the
mean age of this group was 33.5 years
and the ratio of men to women was
approximately 1:1. Of the 212 respon-
dents to the household questionnaire,
94 (44.3%) were fathers, 67 (31.6%) were
mothers, 44 (20.8%) were grand-
parents, and 7 (3.3%) were sons or
dughters.

Of the 1010 persons present in Ser-
bian households in March 1999, 812
(80.4%) remained in Kosovo at the time
of the survey, 123 (12.2%) family mem-
bers had left for Serbia proper, 59 (5.8%)
had left for other parts of Kosovo, 12 (1.2%) had gone abroad, and 1 had gone to Montenegro. Two others had died and 1 was missing. Table 1 shows the differences in demographic characteristics of Serbian residents prior to the bombardment compared with those remaining behind and those leaving their homes (for Serbia proper, other parts of Kosovo, Montenegro, or abroad). Among those relocating, the mean age was lower and the older adults and children younger than 5 years represented a smaller proportion of the total population compared with those people remaining behind. Respondents were aware of their relatives’ reason for leaving their homes in 178 cases; 98 (55.1%) cited lack of security, 28 (15.7%) cited lack of access to education, 21 (11.8%) cited loss of employment, 19 (10.7%) cited loss of their house, 4 (2.2%) cited lack of access to health care, 2 (1.1%) cited limited access to food, and 6 (3.3%) cited other reasons.

**Nutritional Status**

Table 2 shows the results of anthropometric measurements for older Serbian adults and the comparison group of younger Serbian adults. The difference in mean BMI and the overall prevalence of undernutrition (BMI <18.5) between the 2 groups was not statistically significant at the P = .05 level (ANOVA, P = .08; Fisher exact test, P = .06, respectively). Mean BMI was the same for older adult men and women. Older adults living in households with 1 to 2 people had a mean BMI of 25.9 whereas those living in households with more than 2 people had a mean BMI of 22.8 (ANOVA, P = .05). Once we adjusted for age, however, the difference was no longer significant (ANOVA, P = .17).

**Mental Health**

Of the 212 households sampled, 204 persons completed the GHQ-28. The mean age of respondents was 44.8 years, with a female to male ratio of more than 2:1, indicating that women were more likely to be home than men. Table 3 shows the results of the GHQ-28. Women scored higher than men in all comparisons, indicating that they reported suffering higher levels of psychiatric morbidity. The Serbian Kosovar population in this study had significantly higher GHQ-28 scores than the Albanian Kosovar population. After adjusting for age and sex, in the following GHQ-28 categories: total mean GHQ-28 score, social dysfunction, and severe depression.

The mean total GHQ score for Serbians aged 60 years or older was 12.5 (95% CI, 11.8-13.2) and 13.2 (95% CI, 12.1-14.3) for those younger than 60 years. Differences in total scores and scores by symptom category were not statistically significant between the 2 age groups. Depressive symptom scores among Serbian adults declined with increasing number of people living in the household; the mean score was 2.9 for persons in households with 1 or 2 persons, 1.7 in households with 3 or 4 persons, 1.7 in households with 5 or 6 persons, and 1.2 in households with 7 or more people (ANOVA, P = .001). Similarly, total score means tended to decrease with the number of people in the household: 15.7, 13.3, 11.4, and 11.5, respectively (ANOVA, P = .008).

**Access to Health and Food and Source of Income**

One hundred forty-four people reported that they had required health care services between the intensification of the war in late March 1999 and the day of the survey. Of this group, 61 (42.4%) went to the nearest health facility, although 12 required Kosovo force protection to reach the facility. The remaining 83 people (57.6%) cited

### Table 2. Mean and Prevalence of Undernutrition in Older Serbian Adults in Kosovo Compared With Younger Serbian Adults and Older Bosnian Adults*

<table>
<thead>
<tr>
<th>Body Mass Index, kg/m²</th>
<th>Serbian Adults Aged 60 Years or Older in October 1999 (n = 98)</th>
<th>Serbian Adults Aged 18 to 59 Years in October 1999 (n = 51)</th>
<th>Percentage of Bosnian Noninstitutionalized Adults Aged 60 Years or Older in February 1994 (n = 391)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤22</td>
<td>38.8 (29.1-49.2)</td>
<td>19.6 (10.3-33.6)</td>
<td>NA</td>
</tr>
<tr>
<td>&gt;22</td>
<td>19.4 (12.1-28.6)</td>
<td>5.9 (1.5-17.2)</td>
<td>22.0 (18.1-26.5)</td>
</tr>
<tr>
<td>≤18.5</td>
<td>11.2 (5.7-19.2)</td>
<td>2.0 (1.1-11.8)</td>
<td>11.5 (8.6-15.2)</td>
</tr>
<tr>
<td>&gt;18.5</td>
<td>9.2 (4.6-17.2)</td>
<td>2.0 (1.1-11.8)</td>
<td>NA</td>
</tr>
<tr>
<td>≤16.0</td>
<td>2.0 (0.4-7.9)</td>
<td>0</td>
<td>NA</td>
</tr>
<tr>
<td>&gt;16.0</td>
<td>0</td>
<td>0</td>
<td>NA</td>
</tr>
<tr>
<td>Mean (95% confidence interval)</td>
<td>24.2 (23.3-25.1)</td>
<td>25.6 (24.4-26.8)</td>
<td>23.4 (23.0-23.8)</td>
</tr>
</tbody>
</table>

*NA indicates data not available from original study.†

### Table 3. Mean (SE) Score Comparison Between Serbian and Albanian Adults for the General Health Questionnaire-28

<table>
<thead>
<tr>
<th>General Health Questionnaire-28 Category</th>
<th>Serbian Adults (N = 204)</th>
<th>Albanian Adults* (N = 1558)</th>
<th>P Value</th>
<th>Men (n = 60)</th>
<th>Women (n = 128)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total score</td>
<td>13.0 (0.52)</td>
<td>12.8 (0.52)</td>
<td>.03</td>
<td>10.3 (1.01)</td>
<td>14.0 (0.62)</td>
<td>.001</td>
</tr>
<tr>
<td>Somatic symptoms</td>
<td>3.6 (0.16)</td>
<td>3.6 (0.16)</td>
<td>.22</td>
<td>2.5 (0.28)</td>
<td>4.1 (0.19)</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>Anxiety and insomnia</td>
<td>4.7 (0.17)</td>
<td>4.6 (0.17)</td>
<td>.15</td>
<td>3.8 (0.32)</td>
<td>5.0 (0.20)</td>
<td>.001</td>
</tr>
<tr>
<td>Social dysfunction</td>
<td>2.8 (0.17)</td>
<td>2.8 (0.17)</td>
<td>.008</td>
<td>2.3 (0.32)</td>
<td>3.0 (0.21)</td>
<td>.06</td>
</tr>
<tr>
<td>Severe depression</td>
<td>1.9 (0.15)</td>
<td>1.9 (0.15)</td>
<td>&lt;.001</td>
<td>1.6 (0.26)</td>
<td>2.0 (0.20)</td>
<td>.20</td>
</tr>
</tbody>
</table>

*Data were missing for 8 households and data on sex were missing for 16 entries.

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come a much less important source of income, whereas farming, humanitarian aid, and family savings have become common sources. There was no difference in BMI among the older adults living in households that had the same primary source of income before and after the war compared with older adults living in households whose income source had changed (F test; *P*= .48).

**COMMENT**

The results of this assessment indicate the important demographic changes occurring among the Serbian minority population in Kosovo. Approximately 20% of the members of ethnic Serbian families in the geographic areas sampled had already left Kosovo at the time of this survey. Older adults were more likely to remain behind as families left Kosovo. Our data confirmed reports by the Organization for Security and Cooperation in Europe that lack of security is the major reason Serbians left their homes; loss of employment and lack of access to housing and basic services also contributed to their decision. Since the change in administration of the province, Kosovar Albanians have become responsible for administering most social services. Although few respondents cited lack of access to health services as the major reason for family members leaving Kosovo, more than half of those who required health care did not attend the nearest facility mainly because they reported a lack of safe transport or a lack of confidence in Kosovar Albanians providing care.

In developing countries, where incidence rates of communicable disease are high, children younger than 5 years are generally the most nutritionally vulnerable group. As a result, nutrition surveys and monitoring systems in complex emergencies have focused on this age group. In Kosovo, although data disaggregated by ethnic group are not available, nutrition surveys have shown that prevalence rates of acute malnutrition among children younger than 5 years have remained low and stable during the conflict and postconflict period. Surveys carried out by Action Against Hunger in December 1998 and July 1999 have reported acute global malnutrition prevalence rates in this age group of approximately 3% (*z* scores weight for height).

During emergencies in developed countries, older adults have previously been identified as a vulnerable group. Unfortunately, clear cutoffs for acute malnutrition that correlate with increased risk for mortality are not available for adults. Furthermore, decreasing BMI in older adults as a function of aging and their higher prevalence of terminal disease may confound the results. Nonetheless, in cities under siege in other parts of the Balkans, the nutritional status of older adults was a more sensitive and useful indicator of a population’s nutritional status than that of children. Rates of undernutrition in our survey are similar to rates reported among older adults from 3 besieged cities in Bosnia at a time of food scarcity and documented acute weight loss (Table 2), as well as among resident and displaced older adults in Azerbaijan in 1996 in which the prevalence of undernutrition was 11.9%. The mean BMI of 24.2 among Serbian adults aged 60 years or older is lower than the means found in a large sample of older adults in Russia after the collapse of the former Soviet Union and the consequent economic decline; the mean in that study was 24.8 for men and 25.7 for women, and the prevalence of BMI less than 22 was 16.8% and 18.7%, respectively.

Older adult members of Serbian families in Kosovo may be more nutritionally vulnerable than children for several reasons. Although our survey shows that most families were receiving a general food ration, the ration consisted of staple foods only, and these may have been traded or sold to meet other basic food and nonfood needs. Family members then shared the remaining food, and this intrafamilial redistribution of food may favor children. This redistribution, which has been reported elsewhere in the Balkans and in Russia, may affect the older adults disproportionately in

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**Figure. Primary Source of Income for Serbian Minority in Kosovo Before and After March 1999 (N=211)**

Data for 1 household are missing.
households with a large number of family members. Although we found no significant relationship between BMI in older adults and the number of persons living in a household after adjusting for age, our sample size was small and may have lacked power to record such a difference.

Furthermore, our results show major changes in source of income for Serbian families. These changes have had a disproportionate effect on those families who were previously dependent on salaries paid by the government of Yugoslavia. Families who are unable to diversify their income through farming or trade may be particularly affected and the older adults may be more likely to fall into this category. In addition, access to markets has been reduced by the war, and many families travel to Serbia proper to trade and shop. The older adults, as a consequence of immobility and a lack of safe private or public transport, may be unable to use such coping mechanisms.

The results of the GHQ-28 are consistent with recent studies that indicate the importance of psychiatric morbidity in populations affected by war. Although self-reported psychiatric screening tools may have a low specificity for diagnosing particular disorders, the total GHQ-28 score reflects the level of nonspecific psychiatric morbidity. The GHQ-28 has been validated in many languages and its validity is not affected by gender, age, or educational level. However, the GHQ-28 outcome does not correlate with a specific psychiatric diagnosis, and the optimal cutoff score has not been established for populations in the Balkans. The mean total score for the Serbian population is well above all other countries in Europe and elsewhere. People living in small family units were more likely to experience psychological symptoms. Serbian women had higher total mean scores than did men. Women may be experiencing a greater degree of social isolation, may be better able to recognize their own psychological symptoms, or may be more likely to express psychological symptoms in ways recorded by the GHQ-28 (particularly somatic or anxiety symptom categories for which differences were statistically significant).

Scores from the GHQ-28 in the Serbian population were of a similar order of magnitude to those reported recently among the Kosovar Albanian population (Table 3). Given the severe and multiple traumatic events suffered by the Kosovar Albanian population in the recent intensification of the Serbian ethnic cleansing campaign, this finding is surprising. Among both ethnic groups, somatic and anxiety symptoms were more commonly reported than social dysfunction and severe depression. Total mean scores, social dysfunction, and depressive symptoms scores, however, were significantly higher among Serbians. The results may reflect the hostile conditions, absence of hope for the future, fear of deportation, loss of assets and employment, and uncertainty about the whereabouts of family members experienced by the Serbian community remaining in Kosovo. Such experiences, although less dramatic than discrete trauma events, may represent important causes of psychiatric morbidity during war.

There are a number of limitations in our study. Care should be taken in generalizing the results of this survey to the entire Serbian community in Kosovo. People living in Serbian majority areas, such as municipalities north of Mitrovica, which share a border with Serbia proper, may be less vulnerable to the outcomes documented here. Furthermore a potential selection bias was introduced by the refusal of 9% of selected households to be interviewed. We were unable to survey all of the 240 households as originally planned due to security problems. No data were available on these households or on households that had already left Kosovo by the time of the survey. It is possible that these 2 groups differed systematically from our study population. Lastly, although the demispan formula used in the calculation of BMI for the older adult group was the best approximation currently available for Kosovo, the relationship between height and demispan may vary with age, sex, and ethnic group and thus may have led to error in our calculations.

Rapid field surveys such as this, undertaken in extremely difficult field conditions, can provide valuable information beyond their traditional uses in estimating mortality rates and malnutrition prevalence rates in children younger than 5 years. Of particular importance are the inclusion of demographic groups other than children in nutritional surveys and the development and validation of suitable survey techniques to assess the prevalence of psychiatric morbidity among populations affected by complex emergencies. This study demonstrates the feasibility of including a measure of mental health status as part of a broad health assessment in complex emergencies.

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You cannot separate peace from freedom, because no one can be at peace unless he has his freedom.
—Malcolm X (1925-1965)