Self-Reported Health Status of Immigrants from the Former Soviet Union in Israel

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Abstract

Background: A mass influx of immigrants from the former Soviet Union to western countries and Israel followed the demise of the Soviet Bloc at the beginning of the 1990s. It was expected that these immigrants would have a higher morbidity and mortality rate similar to that in the former USSR.

Objectives: To measure and compare self-reported diseases, subjective health and health services utilization of a representative sample of veteran Israeli Jews and immigrants from the former USSR.

Methods: A cross-sectional survey of Israeli adults was performed by telephone interviews. The survey included 793 Israeli Jews, of whom 124 were immigrants from the former USSR who arrived in Israel after 1989 (response rate 52%).

Results: The immigrants reported a higher rate of diseases and sub-optimal health after adjustment for other variables. However, no excess in health services utilization was reported. A time trend of reporting sub-optimal subjective health was observed: the longer the immigrants spent in Israel the more their reporting patterns resembled those of immigrants who arrived in Israel before 1970. Those who arrived after 1994 more frequently reported having a chronic disease.

Conclusions: Acculturation seems to have been the main effect on the immigrants' health, together with a healthy migrant effect at the beginning of the 1990s. The immigrants' health was worse in the later years of the immigration wave, partially reflecting the poor state of health in the former Soviet Union compared to Israel.

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A mass influx of immigrants from the former Soviet Union to western countries and Israel followed the demise of the Soviet Bloc at the beginning of the 1990s. From the end of 1989 to 1998 a total of 755,000 Russian immigrants entered Israel. In 1998 they comprised 13% of the total Israeli population [1]. This large immigration had and continues to have a major influence on the country – socially, economically and politically.

Very few surveys have compared the prevalence of chronic diseases among immigrants and the veteran population. A survey comparing the two groups during 1990–1991 reported an excess of ischemic disease in both men and women and an excess of hypertension and diabetes in female immigrants [2]. Another survey in 1993 examined self-reported chronic diseases and found a lower morbidity among male immigrants than among Israeli veterans. However, in women the prevalence of hypertension and diabetes was similar in both populations and the prevalence of heart diseases was higher [3].

Various mechanisms influence the relationship between migration and health. One possible explanation is that differences in health status between immigrants and veterans are the result of health differentials between the country of origin and the host country. The rates of mortality are significantly higher in the former Soviet Union than in Israel, especially from circulatory diseases, diabetes, respiratory and gastrointestinal conditions [4–6]. Therefore, at the beginning of the 1990s it was anticipated that these immigrants would have a higher morbidity and mortality rate, similar to that in their country of origin. Furthermore, it was expected that this immigration would affect mortality rates in Israel [4]. Modan et al. [7] calculated the expected increase in cancer incidence in Israel following immigration and found a low probability of substantial increase. However, some increase in cancers such as cancer of the esophagus, stomach, lung and cervix is expected.

The second possibility is that a selection process determines who immigrates. This selection can be "positive" – it is the more healthy who immigrate, or the converse ("negative"). The "positive" effect is known as the healthy migrant hypothesis and is illustrated in the Latino immigration to the United States [8]. The selection process of immigration to Israel included being Jewish, which is the only criterion demanded by Israel. All Jews can enter Israel with no discrimination on the basis of health. However, the expected rise in morbidity with this immigration mentioned before was based on the assumption that the Jewish immigrants resemble the total Russian population. Tolts [9] reported that whereas the Russian urban population had the lowest life expectancy for males in the developed countries, which declined from 1988–89 to 1993–94,

the life expectancy of the Jewish population in Russia was higher and declined much less during these years. The life expectancy of Jewish women in Russia was lower than the total population in 1988–89, but it did not decline and was thus higher than the total Russian population. Even though life expectancy was higher among Russian Jews than in the total population in Russia, there was a large difference in this parameter between Jews in Israel and Russian Jews. During the years 1993–94 the life expectancy of Israeli men was 6.3 years higher than Jewish Russian men, and for women it was 6.5 years higher. This difference can be assumed to represent a large gap in health status. Thus it was expected that this immigrant group would present a worse health status compared to the veteran population.

The third possible mechanism is the acculturation process after immigration. Some health problems may arise due to the actual migration process. The stress of acculturation may take its toll on the immigrants' health. Economic stress, finding a suitable job, finding a social network and social support system may all have a profound effect on health. Furthermore, since lower socioeconomic status is related to poor health, as many studies have indicated, we would expect a lower health status in the immigrant community whose socioeconomic status is usually lower during the first years of acculturation [10,11]. In addition, formal and informal barriers can block or limit the immigrants' access to medical care [12,13]. This type of morbidity is expected to be temporary and lessens as the integration into the host society advances. These three mechanisms supported the expectation at the beginning of the 1990s of an excess of morbidity and mortality due to the massive influx of Jews from the former USSR [2,4, 7].

In this study we attempted to characterize the health status of Russian immigrants compared to veteran Israelis, using subjective health, reported chronic diseases, health services utilization, and selected lifestyle risk factors. We discuss the relevance and potential use of subjective health as an indicator of morbidity, mortality and healthcare utilization in an immigrant population.

Methods

The data presented were collected by telephone interviews during the fall of 1998 in a cross-sectional survey of Israeli adults.

Study population

A random sample of 2,000 phone numbers was selected from the national phone company. From these, the fax numbers and work numbers were deleted; also deleted were the phone numbers of households that did not have residents aged 45–75 years – leaving 1,531 eligible households. Overall, 583 households were contacted at least 8 times at different times of the day before they were considered lost to follow-up; 155 respondents refused to answer the questionnaire. A total of 793 respondents completed the questionnaire – a response rate

of 51.8%. Eligible respondents were in the age group 45–75 and could answer the questionnaire in Hebrew or Russian. There was no information about the non-respondents since it was a random telephone interview.

The questionnaire

The questionnaire was devised after gathering questions from other Israeli surveys, mainly those used by the Israel Bureau of Statistics. It covered demographic data, perceived health status, chronic diseases, lifestyle behaviors, and pattern of visits to the healthcare provider. The respondents also reported which health maintenance organizations (sick fund) they belonged to of the four that exist in Israel.

The questionnaire was reviewed by three experts in the field to determine its consensual and content validity, and modifications were made. The questionnaire was then piloted in 75 respondents with final adjustments made accordingly. A test-retest reliability test was performed with 20 questionnaires. In 80% of the questions the responses were identical in both interviews. The questionnaire was translated into Russian, retranslated back into Hebrew and compared with the original version; adjustments were made to achieve high compatibility between the two versions. The Russian version was also pre-tested.

Measures

Respondents' origin was noted as their place of birth. All those reporting arriving in Israel from the former states of the Soviet Union were categorized as such. Recent immigrants were categorized as those arriving in Israel since 1989. In the survey, immigrants from the former Soviet Union comprised 95% of those reporting immigration to Israel since 1989. This group of immigrants was used for the analysis in Tables 1–4. Veterans were categorized as all respondents arriving in Israel before 1989, or born in Israel.

In Table 4, the year of immigration to Israel was divided into four periods: 1970–88, 1989–91, 1992–94, and 1995–98. Health status was assessed using two measures. The respondents were asked if they were ever told by a doctor that they had high blood pressure, diabetes, heart disease, osteoporosis, asthma, or cancer.

Subjective health was assessed by asking the respondents to report their perceived health on a scale of 1 to 5 ("How would you describe your general health lately?"). Optimal health was defined as the two highest scores (presented to the respondents as excellent and good), and sub-optimal health was defined as the 3 lowest scores (so-so, not so good, and bad). Subjective health was accepted as an independent measure of current physical health and risk of death. It did not focus on a specific dimension of health status (i.e., physical, physiologic, mental or social). Instead, such measures reflected the respondents' self-rating of their health in general [14,15]. Subjective health has been shown to be a predictor of mortality, morbidity, disability, and use of health services [15–17], and is therefore used to assess the overall health in many studies.

Education was categorized into two groups: those not finishing high school or with a high school diploma, and those with a higher education. Age was categorized into three groups: 45–54, 55–64, and 65–75. Lifestyle attributes were measured by various variables such as physical activity, smoking habits, etc. Body mass index was calculated using respondents' self-reported height and weight. Overweight was defined as body mass index over 25.

Respondents were asked if they had visited a primary care physician, a specialist or a nurse during the last 3 months and how many times.

Statistical analysis

Analysis sought to determine the characteristics that distinguished those who were born in Israel or arrived in Israel prior to 1989 from those arriving after 1989. Chi-square analyses were conducted to identify bivariate associations between the two populations. Statistical significance was assumed when P was smaller than 0.05. Logistic regression models were used to determine the odds ratio and 95% confidence interval of being a recent immigrant when overweight, smoking, or sedentary, and with regard to healthcare provider utilization. The OR for reporting sub-optimal health or a disease in recent immigrants compared to other respondents was also calculated. The different groups of respondents reporting the presence of disease were used to calculate the OR of being a recent immigrant when reporting sub-optimal health for each disease. These logistic regression models adjusted for age, gender, education, occupation, overweight, and healthcare services. A logistic regression model was used also to compare the immigrants by time of arrival in Israel with regard to their subjective health or presence of disease. The statistical significance of the time trend was evaluated by the Mantel-Haenzel chi-square test.

Results

Our study group comprised 793 Israeli residents aged 45–75 years. Of these, 210 were born in the former Soviet Union of whom 124 arrived in Israel after 1989 (recent immigrants). Another 22 respondents arrived between 1970 and 1988, representing a smaller wave of immigration in the 1970s and 1980s. Recent immigrants in this study were found to be older, more educated, and a higher percent of them were not working (retired or unemployed). They also have a different distribution of HMO membership compared to the veteran population [Table 1]. These characteristics are similar to those of the general population of recent immigrants in Israel [1].

A higher percentage of the recent immigrants reported sub-optimal subjective health compared to the rest of the survey population before adjustment for age (67% and 29% respec-

OR = odds ratio
HMO = health maintenance organization (sick fund)

Table 1. Sociodemographic and health characteristics of recent immigrants from the former Soviet Union and the veteran population (%)

Characteristics	Veteran population (n=669)	Immigrants (n=124)	P
Age			
45–54	49.5	30.9	
55–64	26.6	31.7	0.001
65–75	23.9	37.4	
Education			
≤12 yr	61.4	21.8	0.001
>12 yr	38.6	78.2	
Gender			
Male	34.4	29.7	0.32
Female	65.6	70.3	
Type of occupation	38.6	35.5	
Employed	12.1	1.6	
Self-employed	8.1	14.5	0.001
Unemployed	10.5	2.4	
Housewife	30.8	46.0	
Marital status			
Married	75.7	66.9	
Single	2.6	4.8	0.315
Divorced/separated	8.4	11.5	
Widowed	13.2	16.9	
Subjective health status			
Optimal	71.0	32.5	0.001
Sub-optimal	29.1	67.5	
Reported diseases			
At least 1	50.7	71.7	0.001
At least 2	18.1	38.7	0.001
Hypertension	25.1	55.6	0.001
Diabetes	10.5	9.7	0.79
Heart disease	9.0	30.6	0.001
Osteoporosis	10.7	22.6	0.001
HMO membership			
A	69.9	42.7	
B	15.6	29.8	
C	7.8	13.0	0.001
D	6.7	14.5	

tively). The recent immigrants also reported more chronic diseases such as hypertension, heart disease and osteoporosis. There was no difference in the reported prevalence of elevated blood lipids and diabetes between the two groups. At least two diseases were reported by 39% of the immigrants compared to only 18% of the veteran Israelis [Table 1]. However, the immigrant population in this survey was older than the general population, therefore requiring age adjustment.

A logistic regression model was used to adjust for socio-economic variables such as age, education, occupation and other variables [Table 2]. The odds ratio of a recent immigrant reporting sub-optimal health was 8.1 compared to the veteran population. The OR of having at least one disease (high blood pressure, elevated blood lipids, diabetes, heart disease, osteoporosis, asthma, or cancer) was 1.7.

Table 2. Reporting sub-optimal subjective health or having a disease in recent immigrants compared to veterans (OR * 95% CI and *P* value)

	Odds ratio	Confidence interval	*P*
Subjective health status	8.1	4.80–13.70	0.0001
At least one reported disease	1.70	1.002–2.87	0.049

* Logistic regression analysis, adjusting for gender, age, education, occupation, body mass index, and HMO.

Table 3. Reporting sub-optimal subjective health in immigrants compared to veterans with or without reported diseases (OR,* 95%, CI and *P*), and odds ratio for being a recent immigrant

Population	Risk of reporting sub-optimal health		
	OR	CI	*P*
No diseases	7.9**	2.7–22.7	0.0001
One or more diseases	7.9**	4.1–15.1	0.0001
Hypertension	13.9**	5.3–35.7	0.0001
Heart disease	2.9	0.6–12.6	0.16
Osteoporosis	6.2**	1.5–2.5	0.01
	Risk of being a recent immigrant		
Visit to primary physician in the last 3 months	0.8	0.5–1.3	0.38
Visit to specialist in the last 3 months	1.2	0.8–1.9	0.37
Visit to nurse in the last 3 months	0.38**	0.2–0.7	0.0014

* Logistic regression analysis, adjusting for gender, age, education, occupation, body mass index above 25, and HMO.

** *P*< 0.05

CI = confidence interval

It is reasonable to assume that as recent immigrants reported a higher prevalence of chronic diseases, a higher proportion of them would also report their health as sub-optimal. However, the recent immigrants with no reported diseases also had an OR of 7.9 for reporting sub-optimal health compared to the veteran population with no reported diseases [Table 3]. Immigrants reporting hypertension were especially at a higher risk of reporting sub-optimal health (OR = 12) [Table 3]. All of the 12 recent immigrants reporting diabetes reported sub-optimal health, compared to 51% (n=35) in the veteran population (data not presented). Recent immigrants with heart disease had an OR of 2.9 for reporting sub-optimal health when compared to the veteran respondents, however this difference was not statistically significant. There may have been a difference between the two groups but our sample size was too small to show a statistical significance, as the odds ratio was relatively low.

A higher burden of disease and sub-optimal subjective health in the recent immigrants could express itself in high utilization of health services and higher healthcare costs. However, there was no difference in the proportion of recent immigrants visiting the primary physician and specialists during the last 3 months compared to the veteran population after adjustment for socioeconomic variables. In contrast, a lower proportion of the immigrants reported visiting a nurse during the last 3 months (OR = 0.38) [Table 3]. The number of visits the two groups reported during the last 3 months was similar (data not presented).

The period of immigration and the duration of living in Israel may be correlated with subjective health and presence of diseases. To test this, the respondents born in the former USSR (251 respondents) were divided into five groups: the first comprised those arriving more than 30 years ago, the second consisted of those representing a small immigration wave in the 1970s and 1980s, and the recent immigration wave (during the 1990s) was divided into three periods representing the length of stay in Israel. The odds ratio for reporting sub-optimal health or presence of diseases was calculated using a logistic regression model adjusting for age, gender, and the presence of disease with regard to subjective health. The later the respondent arrived in Israel the higher the risk of reporting sub-optimal health. The immigrants arriving in Israel after 1995 reported having sub-optimal health 6.4 times more often than those arriving before 1970 [Table 4]. The immigrants arriving before 1994 did not differ significantly in the risk of having a disease, although a trend was observed. The immigrants arriving after 1994 did report more often having a disease (OR = 5) [Table 4]. Two different trends were observed: the first reflecting that the longer the immigrants live in Israel the less different they are from those who arrived in Israel before 1970 with regard to their subjective health and the second showing that the recent

Table 4. Reporting sub-optimal health or presence of diseases in Russian immigrants, by period of immigration (OR, 95%, CI and *P*), adjusted for age, gender and presence of disease

Period of immigration	Reported sub-optimal health			Presence of at least one disease		
	OR	CI	P	OR	CI	P
Immigrated before 1970 (n=103)	1*	–	–	1*	–	–
1970–88 (n=22)	1.25	0.41–3.79	0.693	0.91	0.33–2.57	0.86
1989–91 (n=56)	2.98	1.36–6.54	0.007	1.38	0.64–2.94	0.41
1992–94 (n=36)	4.81	1.78–12.98	0.002	2.33	0.84–6.42	0.10
1995–99 (n=34)	6.41	2.26–18.18	0.0005	4.99	1.54–16.19	0.007
Chi-square trend	29.55		0.001	10.16	–	0.001

* Reference group

immigrants who arrived mainly after 1995 have a higher prevalence of reported diseases.

Discussion

In this study the recent immigrants from the former Soviet Union reported a higher rate of chronic diseases and sub-optimal health, after adjustment for other variables such as age and gender. A high burden of disease was expected to correlate with high utilization of healthcare services, however this was not indicated in our data. Moreover, a high burden of diseases would also be expected to have an effect on mortality. However, the actual age-adjusted mortality rates (1990–94) in Israel were similar in Russian male immigrants and the veteran population, and the female immigrant population had a significantly lower age-adjusted mortality rate compared to the veteran female population. The age-specific mortality rates were higher in the immigrant population compared to the veteran population in the younger age group, and lower in the older age group. The mortality rates from cancer in the immigrant population were higher, but lower from myocardial infarction, ischemic heart disease, diabetes, and cerebrovascular diseases [18]. High morbidity from some types of diseases does not always imply high mortality, although with the morbidity data found in this study we would expect to observe some increase in mortality rates in Israel.

The data presented here may contribute to our under-standing of the mechanisms influencing health among im-migrants. The assumption that the immigrants' health was similar to the health of the population in their country of origin (their health being worse than in the Israeli population) is supported by the fact that their subjective health and prevalence of diseases was higher than that of the veteran population in Israel. However, the fact that mortality and healthcare utilization was not higher does not support this interpretation. A selection process may have occurred in which the more healthy immigrants immigrated at the beginning of the 1990s (healthy migrant hypothesis) [8], while those resembling the population in Russia immigrated at the end of the period. Immigrants arriving during 1989–91 did not differ in the number of diseases they reported compared to the veteran population, but those arriving after 1992 reported a higher level of morbidity. There may also be a cohort effect since waves of immigration differed in age, country of origin within the former Soviet Union, and other variables. In this survey it was not possible to differentiate between the age of the respondents and the time spent in Israel as a predictor of health status since the sample was too small. It is possible that during the first years of the mass immigration, those who immigrated to Israel were a relatively healthy group in relation to the total population in the country of origin even though there was no discrimination on the basis of health when entering Israel. This explanation may be supported by 1994–96 mortality data [1,18] showing that mortality rates among immigrants were not higher than among Israeli veterans. In later years after the breakdown of the social and economic structure of Russia, those with a lower health status may also have immigrated after hearing from relatives and friends about life in Israel. This may have prompted a more representative migration of the Jewish population in Russia in the later years, with the chronically ill hoping to improve their health in Israel [9]. If this is true, we may yet see a rise in mortality among immigrants who arrived during the second half of the decade as an increase in mortality may take a few years to be observed.

Another type of selection may be the instability of the immigrant population in Israel. A small fraction of immigrants leave Israel after a short period for Europe, the USA or back to Russia. It may be that this migration is of a healthy population, leaving the less healthy in Israel where they are entitled to national health insurance. This may cause an increase in the percent of the population with sub-optimal health within the population of Russian immigrants still living in Israel.

Acculturation has a profound effect on the health of immigrants. Subjective health is an expression of the integra-tion of different aspects of well being, and it may also express the difficulties of the acculturation process. A few studies on the mental health and somatic manifestation of psychological distress on immigrants from the former USSR in Israel [19,20] have shown that the level of psychological distress was significantly higher in the immigrants compared to the veteran population, but not in the potential immigrant control group (Jews still living in Russia). A two-phase pattern was found where the distress peaked at 27 months after arrival in Israel, and then decreased [19]. The level of somatization was higher than in the general population and was associated with psychological distress [20]. A study on the subjective health of older immigrants (70+) in Israel found that the recent immigrants reported lower levels of health and psychosocial well being compared to the veterans [11]. This may partially add to the high rate of sub-optimal subjective health reported by immigrants, especially those arriving after 1994 who reported the highest rate of sub-optimal health. This indicates that reporting sub-optimal health may partially express the distress of acculturation and not only physical health status [15–17]. The longer immigrants spend in Israel the more their reporting pattern resembles that of immigrants who arrived in Israel before 1970.

Another fact that supports the importance of acculturation is the discrepancy between the reported high burden of disease and the lower subjective health compared to mortality and healthcare utilization that are not higher than in the veteran population. The health status measures used in this study may express the distress of acculturation, which decreased with time. Since "feeling unwell" (sub-optimal subjective health) does not mean "feeling sick," the immigrants may not view a visit to the physician as appropriate when reporting sub-optimal health, diminishing the correlation between subjective health and utilization of healthcare services. This may imply that other sources of support and help for immigrants – such as social

support systems, economic and educational systems – may be needed.

Subjective health is a measure used in many studies and has been found to highly correlate with mortality and morbidity [14–16] as well as with utilization of healthcare services [15,16,21]. However, we cannot conclude from research in other communities and cultures that the meaning and significance of subjective health will be the same in this population. When subjectively evaluating their health, the way this population answered subjective health questions may be influenced by factors correlating less with morbidity and mortality. Part of the high sub-optimal subjective health response may have a cultural-related response pattern. Recent immigrants did not report a higher utilization of healthcare services, even though they reported a lower health status. This can be explained by the fact that recent immigrants have more barriers to healthcare utilization and need to get used to the Israeli health system. Other studies showed that the instrumental aspects of care were seen as an improvement over the care they received in their home country, but the communication and diverse cultures of illness and cure were significant barriers [13,22,23]. However, in our study, healthcare utilization was measured only by visits to health professionals, while aspects such as medication, tests and hospitalizations were not measured.

The limitations of this survey are primarily the reliance on self-reported measures of health, the fact that it is not a longitudinal survey, and the small sample size of immigrants. Survivor bias is inherent in cross-sectional studies of this sort – the very sick may have died previous to the survey, leaving the healthy to answer the questions. However, this does not correspond to the fact that there was no increase in mortality among immigrants as compared to the veteran population.

The higher rate of chronic diseases is validated by two previous studies. Ben-Nun [2] correlated the diseases reported by Russian immigrants in Israel with the medical diagnoses, and found a correlation in 75% of the cases. Only for gastrointestinal disease was there a large difference between self-reporting and physician diagnosis, however gastrointestinal diseases were not included in this study. The prevalence of diabetes in this study (10%) corresponded with the prevalence found by Stern et al. [24] of a low rate of undiagnosed diabetes in the Israeli population. Usually, it is expected that individuals with diseases report a lower subjective health, however in this immigrant population those not reporting a chronic disease had a much higher risk of reporting sub-optimal health than veterans. Among those reporting hypertension and diabetes, the risk of reporting sub-optimal subjective health in immigrants compared to veterans was even higher than in those not reporting any diseases

In this study it was impossible to differentiate between a cohort effect and an acculturation effect. Nonetheless, the fact that the last wave of immigration reported a high rate of chronic diseases warrants attention from the health and welfare services and may still increase the burden of health costs as predicted at the beginning of the 1990s.

The meaning and impact of subjective health in an immigrant population may not be the same as for the veteran population, so caution is needed when using this measure with heterogenic populations that include immigrants. All this calls for further follow-up of the health of immigrants.

In conclusion, we believe that all three mechanisms by which health and migration are associated contribute to some extent to the health of immigrants. It seems that acculturation has the highest impact on the immigrant's health. The high burden of disease reported in the later years of the migration wave may yet manifest its effect on mortality and healthcare service utilization in the future.

References

1. Central Bureau of Statistics. Statistical Abstracts of Israel. Publication 50. Jerusalem, 1999.
2. Ben-Nun L. Prevalence of chronic diseases in immigrants from Russia at a primary care clinic and the socio-demographic characteristics. *Harefuah* 1994;127:441–5 (Hebrew).
3. Central Bureau of Statistics. Use of health services survey, January-March 1993, Selected chronic diseases. Publication 1030. Jerusalem, 1996.
4. Rennert G. Implications of Russian immigration on morbidity patterns in Israel. *Int J Epidemiol* 1994;23:751–6.
5. Cockerham WC. The social determinants of the decline of life expectancy in Russia and Eastern Europe: a lifestyle explanation. *J Health Soc Behav* 1997;38:117–30.
6. Leon DA, Chenet L, Shkolnikov VM, Zakharov S, Shapiro J, Rakhmanova G, Vassin S, McKee M. Huge variation in Russian mortality rates 1984-1994: artifact, alcohol, or what? *Lancet* 1997;350:383–8.
7. Modan B, Etlin S, Reminnick LI, Novikov A. The effect of the immigration from the former Soviet Union on the rates of cancer in Israel. *Harefuah* 1995;128:754–6 (Hebrew).
8. Abraido-Lanza AF, Dohrenwend BP, Ng-Mak DS, Turner JB. The Latino mortality paradox: a test of the "Salmon bias" and healthy migrant hypotheses." *Am J Public Health* 1999;89:1543–8.
9. Tolts M. The Jewish population of Russia, 1989-1995. *Jews in Eastern Europe* (published by the Hebrew University of Jerusalem) 1996; 3:5–19.
10. Reijneveld SA. Reported health, lifestyles, and use of health of first generation immigrants in The Netherlands: do socioeconomic factors explain their adverse position? *J Epidemiol Commun Health* 1998;52:298–304.
11. Carmel S, Lazar A. Health and wellbeing among elderly persons in Israel: the role of social class and immigration status. *Ethnic Health* 1998;3:31–43.
12. Hurt WM, Kim K. Correlates of Korean immigrants' mental health. *J Nerve Ment Dis* 1990;178:703–11.
13. Reiff M, Zakut H, Weingarten MA. Illness and treatment perceptions of Ethiopian immigrants and their doctors in Israel. *Am J Public Health* 1999;89:1814–18.
14. Wannamethee G, Shaper AG. Self-assessment of health status and mortality in middle-aged British men. *Int J Epidemiol* 1991;20:239–45.

15. Idler EL, Benyamini Y. Self-rated health and mortality: a review of twenty-seven community studies. *J Health Soc Behav* 1997;38:21–37.

16. Idler EL. Age differences in self-assessments of health: age changes, cohort differences, or survivorship? *J Geront Soc Sci* 1993;48:S289–300.

17. Ferraro KF, Farmer MM, Wybraniec JA. Health trajectories: long-term dynamics among black and white adults. *J Health Soc Behav* 1997;38:38–54.

18. Central Bureau of Statistics. Mortality among immigrants from former USSR, 1990-1994. Publication 8. Jerusalem, 1998.

19. Ritsner M, Ponizovsky A. Psychological distress through immigration: the two-phase temporal pattern? *Int J Soc Psychiatry* 1999;45:125–39.

20. Ritsner M, Ponizovsky A, Kurs R, Modai I. Somatization in an immigrant population in Israel: a community survey of prevalence, risk factors, and help-seeking behavior. *Am J Psychiatry* 2000;157:385–92.

21. Angel R, Gronfein W. The use of subjective information in statistical models. *Am Soc Rev* 1988;53:464–73.

22. Remennick LI, Ottenstein-Eisen N. Reaction of new soviet immigration to primary care services in Israel. *Int J Health Serv* 1998;28:555–74.

23. Kiderman A, Brawer-Ostrovsky Y, Weingarten MA. Medical cultures in collision: primary care of Soviet immigrants in Israel. *Eur J Gen Pract* 1995;1:67–70.

24. Stern E, Raz I, Weitzman S. Prevalence of diabetes mellitus among workers in Israel: a nation-wide study. *Acta Diabetol* 1999;36:169–72.

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