Moscow Health Survey 2004 – social surveying under difficult circumstances

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Summary

Objectives: The aim of this paper is to present the Moscow Health Survey 2004, which was designed to examine health inequalities in Moscow. In particular we want to discuss social survey problems, such as non-response, in Moscow and Russia.
Methods: Interviews, covering social and economic circumstances, health and social trust, of a stratified random sample of the greater Moscow population, aged 18+. Reasons for non-response were noted down with great care. Odds ratios (ORs) for self-rated health by gender and by six social dimensions were estimated separately for districts with low and high response rates. Bias due to non-response is discussed.
Results and conclusions: About one in two (53.1 %) of approached individuals could not be interviewed, resulting in 1190 completed interviews. Non-response in most Russian surveys, but perhaps particularly in Moscow, is large, partly due to fear of strangers and distrust of authorities. ORs for poor health vary significantly by gender, occupational class, education and economic hardship. We find no significant differences in these ORs when comparing districts with low and high response rates. Non-response may be a problem when estimating prevalence rates or population means, but much less so when estimating odds ratios in multivariate analyses.

Key words: Non-response – Survey – Self-rated health – Economic hardship – Trust – Moscow.

It is well-known that Russian public health has deteriorated both during the Soviet period and recently, thus life expectancy at birth in 2005 (65 years, men and women combined) was lower than four decades earlier (69 years in 1965), and some 13 years behind the average for the 27 present EU members. Self-reported health in Russia is also particularly poor compared to other European countries, mirroring its grim mortality statistics[1]. Social and institutional trust as well as social capital in general appear very low[1–4].

Few recent studies have addressed health, social and economic circumstances specifically in Moscow. Palosuo[5] and McKeehan[6] collected data in 1991, the last year of Soviet rule. The Survey of Russian Marriages collected social data in 1996[7] and Schmid et al[8] collected data on health and health behaviours in 2000 in Moscow's first telephone survey. Social, political and economic changes since 1991 have been fundamental. Social benefits, such as pensions, have been eroded. The system of medical care has undergone wide-reaching changes. The combined influence of transition to market economy and globalization has changed Moscow. It is now one of the most expensive cities in the world. Enormous wealth now coexists with stark poverty[9]. In 2004, when our study was undertaken, the social situation was characterized by massive poverty in spite of economic growth since 1998. We thus assumed that social inequalities in Russia, including in health, should be particularly pronounced in Moscow, and we wanted to address this issue by means of a survey in the capital.

Buckley[10] considered the Russian survey tradition to be generally less sophisticated than that in some western countries. However, the long series of surveys, based on visits, conducted in Taganrog by the Institute for Social and Economic Studies of the Population (ISESP) of the Russian Academy of Sciences, and from 1998 conducted as a Russian-Swedish collaboration, have proven very useful in addressing problems of social inequalities, poverty and health[11–16].

We continued this collaboration and undertook to survey a random sample of the adult population of greater Moscow (8.5 million inhabitants), by conducting interviews covering their overall social, economic and health circumstances. The prime aim was to investigate self-rated health in Moscow in relation to social, economic and behavioural factors. Most questions have been used in previous studies inside or outside Russia, for instance the Estonian Health Survey 1996[17]; the World Values Survey 1995–97[1]; the Taganrog Survey 1998[12, 14]. Thus, we added a comparative element to the study.

Below we give details of the surveying process of the Moscow Health Study, responding to some of the concerns that have been raised by Buckley[10], Shlapentokh[18–19] and others. Schmid et al[8] identified a need for surveys of risk factors, and concluded that "efforts should be made in the future to insure that the survey sample is more representative".

Our aim is to provide insights into the problems of social surveying in Russia by sharing our experience from the Moscow Health Survey conducted in 2004. We believe that our problems are common to many other studies.

Specific conditions of surveying

Social surveying in Moscow has become particularly difficult in recent years. The social transformation of Russia has been accompanied by soaring crime rates, with registered crimes against persons and property increasing threefold since 1990[20]. Shlapentokh[18] reports that over 60 % of Russians fear the criminalization and lawlessness of society. Two thirds of those reporting fear base this on personal experience, while a quarter are primarily influenced by the media. Media, newspapers and special TV programmes not only inform people about criminal cases, but warn them and give recommendations on personal security. The main message is: "Be careful with strangers, do not let them into your homes." In order to improve the safety of residents the Moscow Government ordered that code locks should be installed in the front doors of all municipal housing. In the twelve months before our survey was completed there were a number of spectacular violent events in Moscow, for instance the explosion in the Tushina aerodrome at a rock festival (July 5th 2003), the explosion in the pedestrian passage way under Tverskaya Street (July 9th 2003), the explosion near the Hotel National opposite the Kremlin (Dec 9th 2003), the explosion in a central underground station (Feb 6th 2004), and the collapse of the roof of a very popular aqua park (Feb 14th 2004). Thus a tense atmosphere prevailed in which people were cautious about, or even frightened of, opening their front doors. We will give further data below to illustrate the degree of distrust prevailing in Moscow society in 2004.

Population and methods

Sampling

The target population of greater Moscow encompasses around 8,540,000 individuals aged 18 or over. Table 1 gives the size of this population in ten administrative districts. The latter consist of 125 municipal districts which constituted our sampling frame. We aimed for a specific number of interviews, with a specific gender and age distribution, in each municipal district, in order to mirror the age and gender distribution of the target population, so called stratified random sampling. We used a technique of first random sampling flats. When someone opened the door we asked for a person of a specific

Table 1. Number and proportions of adult Moscow residents, flats, interviews and response rate by Moscow City Administrative Districts.

	Administrative District	Population*		Flats*		Number of interviews		Response rate***
		thousands	%	thousands	%	persons	%	%
	All Moscow	8539.6	100.0	3588.3	100.0	1190**	100.0	46.9
1	**Central**	560.3	6.6	244.0	6.8	86	7.2	45.0
2	**West**	917.1	10.7	394.1	11.0	128	10.7	29.5
3	**South-West**	976.5	11.4	437.3	12.2	144	12.1	60.3
4	**North-West**	653.7	7.7	283.2	7.9	94	7.9	46.7
5	**South-East**	915.7	10.7	400.5	11.2	129	10.8	62.7
6	**North-East**	1061.8	12.4	415.1	11.6	133	11.2	39.4
7	**North**	868.1	10.2	374.6	10.4	120	10.1	32.0
8	**South**	1270.7	14.9	496.0	13.8	164	13.8	56.6
9	**East**	1109.8	13.0	463.4	12.9	162	13.6	43.7
10	**Zelenograd**	205.9	2.4	82.4	2.3	30	2.5	53.6

* Sources: Mosgorkomstat, Population flow in Moscow, 64, Moscow 2003
** 10 out of 1200 were rejected because interviewers assessed them to be of poor quality
*** Calculated from the main list of addresses

age and gender. If more than one individual filled the criteria, the person with the nearest birth date was chosen. Our aim was to carry out 1,200 interviews, starting with a list of 1,200 addresses ("the main list of addresses"). In line with Russian survey traditions, non-responses were replaced with new subjects, randomly drawn from the same target population before the start of interviewing ("the reserve list"). Thus, where there was no contact, or if nobody matched the age/gender criteria, a new address, from the reserve list in the same municipal district, was visited. We visited in all somewhat more than 2,500 addresses to obtain a total of 1,200 questionnaires. Ten out of 1,200 received questionnaires were rejected, since the interview was judged to be of poor quality. Thus the final sample consists of 1,190 persons.

The database of the Moscow city telephone network was used for random sampling of addresses (flats). It is a list of personal telephone numbers of Moscow residents together with their addresses. The population distribution in administrative districts and the distribution of flats practically coincide (Table 1, columns 4 and 6). Ninety-eight % of flats in Moscow have telephones; the remaining 2 % are in the districts with newly-erected buildings. A corresponding number of flats in such buildings were visited by interviewers. Four percent of the some 3,600,000 flats in Moscow are hostels or communal flats, housing more than one family (kommunalka).

The sample size in each of ten city administrative districts was calculated using the size of the current population (01.01.2003) and the number of flats in each such district, provided by Mosgoskomstat[21]. To get the right balance between municipal districts within a city administrative district we used the size of their current population (on 1.01.2002), which was the latest available data for municipal districts. An Appendix is available from the authors that show the number of respondents we aimed to interview in each municipal district based on the above calculations, together with the actual number of interviews carried out there.

Field work

Face-to-face interviews were based on a structured questionnaire, which contains approximately 100 questions (sometimes with subquestions), divided into five topics: demographic factors, level of living (income, economic hardship, housing), health (self-rated health, illnesses, use of health services), way of life (alcohol, smoking, diet, exercise) and social capital (family relations, membership of voluntary associations, political participation, informal networking, support and trust). For instance, we asked respondents "*How would you generally describe your state of health at present? Would you say it is: very good, good, satisfactory, poor or very poor*". We dichotomized between good and satisfactory.

Trust was operationalised using the following questions: In general, do you think most people can be trusted or that you cannot be too careful when dealing with other people? It was measured on a scale, where 1 represents no trust and 5 great trust. Institutional trust was also measured using a 1–5 scale. Economic hardship was based on questions about ability to buy fish or meat, buy necessary clothing or footwear, afford events such as cinema or need to borrow money for such purposes. The original questionnaire was modified somewhat on the basis of interviewer experience from a pilot study. The Moscow and Stockholm teams of researchers first agreed on a questionnaire in the English language, which was translated into Russian with minor adjustments; thereafter independently translated back into English again, to avoid misunderstandings.

The interviews were carried out by 30 interviewers (27 females and 3 males) in three teams. These were trained beforehand by the ISESP and led by a supervisor who gave them support and guidance in all practical matters during the interview period. Each interviewer interviewed about forty persons distributed across all ages and both sexes. Interviewers were instructed to call at the sampled address three times (at different hours of the day), or if this was unsuccessful a telephone call was made, all within the time frame of one week. Many interviewers were reluctant to use telephones, as they knew by experience that it is easier for a respondent to refuse to be interviewed by telephone, than face-to-face, particularly when the interviewer comes specially to carry out an interview. To encourage participation in the survey, respondents were given a small gift after the finished interview, a practice that has been applied in previous surveys by ISESP, and found to create good feelings. Approaching addresses and establishing a positive contact with potential respondents were demanding tasks for the interviewers, especially in certain parts of Moscow. Certificates confirming the authority and identity of interviewers for the period of the survey were often not convincing. On a number of occasions respondents phoned the institute to check the identity of the interviewers. In four cases, in the Central and Southern districts of Moscow, the individuals approached for interview called the police, and two interviewers were arrested. Talking to the local head of police, the research team leader was told that questions about trust in authorities and the president should not be asked in a period running up to the presidential election. The 1938 repression has not been forgotten, he explained. In spite of such difficulties interviewers were determined to go on.

Non-response

Non-response occurred frequently and was a concern even before the survey had begun. Reports of lax praxis in many previous Russian surveys[10] reinforced this concern. We there-

fore carefully recorded why we were unable to carry out an
interview at a sampled address and the reasons given for not
wanting to participate in the survey. Table 2 summarizes this
information. Non-response is defined as a failure to interview
a person in a chosen flat, regardless of the causes of such fail-
ure. As we shall see below, this is a stricter definition of non-
response than in many other studies. We give the issue consid-
erable space below. Finally we try to judge whether any bias
from non-response exists in prevalence rates and odds ratios
by looking at health differences by six social dimensions in
low- and high-response areas.

Results

Estimation and analysis of non-response is based on the first
1200 attempted interviews (main list of addresses). The re-
sponse rate for each of the ten administrative districts is giv-
en in Table 1. The best response rates are in the South-east,
South-west and South districts (57–63 %) and the poorest

rates in the North and West districts (30–32 %). Among dis-
tricts with the highest response rate was Zelenograd, a rural
suburb to Moscow, while the more prestigious West district
had low response rates. In urban Moscow, administrative dis-
tricts with high non-response rates also tended to have high
levels of distrust.

In one out of ten attempted interviews we failed to establish
contact at all. This was mainly due to such factors as "absence
of respondent over the whole period of the survey". The in-
accessibility of many buildings, which had recently installed
code locks on their doors, was a contributing cause. Unlike
other studies, including the so-called New Russia Barometer
Studies[4], we categorized these failed attempts as non-response
(see below).

The great majority of failed attempts to interview were caused
by a blank refusal, with the person just closing the door on
the interviewer or saying "I don't want to" or "I need noth-
ing from you". This was the case at one out of every four
addresses. About one in ten attempted interviews resulted in
the respondent declining to take part, giving such reasons as

Table 2. Unsuccessful attempts to interview by cause or stated reasons, based on main list of addresses (n = 1200).

Result of attempt to interview	Number of unsuccessful attempts	Outcome of attempted interview, summarized over major categories	Non-response rate, (n/1165)
No contact established		**115**	**0.099**
– No contact after three visits and telephone call	92		
– Code-locked front doors	23		
Declines interview		**132**	**0.113**
– Reference to being too busy, or illness or family circumstances	132		
Refuses interview without specific motivation		**301**	**0.258**
– States that I don't want to, I need nothing	270		
– Opens door, but doesn't enter into conversation	31		
Refuses interview with fear-based motivation		**35**	**0.030**
– I feel fear, I don't open the door to anybody	28		
– We took advice and decided against (after telephone agreement to be interviewed)	3		
– Called the police and/or had interviewer arrested	4		
Refuses with other motivation		**36**	**0.031**
– don't want to talk about my life	1		
– never participates in surveys	10		
– recently participated in other survey	5		
– the topic of survey is not interesting	12		
– these surveys change nothing	8		
Total number of non-responses in main list		**619**	**0.531**
Total number of conducted interviews from main list		**546**	
Response plus non-response		**1165**	
Technical causes of failure		**35**	–
– Rejected for not meeting gender/age criteria	14		
– Foreign citizens, non-resident in Moscow	12		
– Interview could not been carried out due to deafness or serious disability	9		
Grand total from main list		**1200**	

being busy, or ill, or having family problems. To some extent these reasons were genuine. However, interviewers took the view that they often served as a more polite form of refusal. Strong distrust and fear of crime was openly expressed by three out of every 100 persons approached. "I don't open the door to anybody" was the most common comment, and in four cases the respondents called the police. Openly admitting fear was uncommon and thus constitutes a small share of the total non-response (<6%), but in our view these cases are indicative of a more widespread unspoken attitude.

Other motives for refusal to participate represent a multifaceted complex of social attitudes, such as lack of confidence in the ongoing market transformations, including the accompanying social reforms. Despite assurances about the purely scientific character of this survey, some respondents took it as a new PR or advertising campaign, indicated through such answers as "we don't need anything"; "I never take part in surveys"; "I have recently taken part in another survey". Some expressed a distrust of social surveys: "These surveys give no results, nothing will change". There were also a number of more technical reasons for failing to find persons to interview at a chosen address, such as no one at that address meeting the age and gender criteria. This usually happened at the final stage of the survey work, when interviewers were coming to the end of an address list. This does not constitute non-response in a technical sense.

Trust

The degree of trust was addressed directly by several questions at interview. Two-fifths (43%) of the interviewed agreed with the statement that "one cannot be careful enough when dealing with other people"; only seven percent agreed with the statement that "most people can be trusted". 65% agreed, totally or partially, that "these days you do not really know whom to trust"; only 18% disagreed, partially or totally. This supports the notion above, that limited social trust is a pervasive problem in contemporary Moscow society. The findings

also indicate that institutional trust is low in Moscow. More than two thirds stated that they do not trust courts (66%), the police (70%), trade unions (71%), Parliament (69%) and political parties (72%).

In sum, the non-response corresponds to about one in two attempted interviews. Most of these failed because of active refusal, with no particular reason given. Distrust and fear of crime is in all likelihood a weighty factor behind the considerable number of blank refusals, where no reason was given. Lack of interest and general suspicion of the purpose of the survey are other factors linked to non-response. We were concerned that non-response might bias prevalence rates and odds ratios and we discuss both possibilities below.

Estimating prevalence rates for six social dimensions

As intended, the age and gender distribution of the sample (Table 3) closely mirrors that of Moscow as a whole. Table 4 also shows the distribution across six distinct social dimensions, namely place of birth, marital status, education, social class, economic hardship, and religious denomination. Marital distribution differs considerably between men and women, particularly in the much larger number of widows than widowers. Women suffer more economic hardship than men and they have less skilled occupations. Nearly two thirds of the sample was born in Moscow, and three fourths report themselves as of orthodox religion (women more often than men), with a fifth having no denomination (men more often than women). At first glance, this is in accordance with what is generally known already.

Further, we looked at the distributions of the same six characteristics separately for administrative districts with high response rates (districts 3, 4, 5, 8 and 10) and low response rates (districts 1, 2, 6, 7 and 9). The difference between high- and low response districts was tested by chi square test for each dimension. For women there were no significant differences in any of the above characteristics. For men, we found such a difference ($p <0.05$) for birthplace, occupational class and

Table 3. Number and proportion of respondents by gender and age group (n = 1190) compared to that of the population of Moscow*.

Age group	Moscow Health Survey respondents, N			Moscow Health Survey respondents, %			Moscow Population, %		
	Male	Female	All	Male	Female	All	Male	Female	All
18–29	119	131	250	23	19	21	26	20	22
30–39	92	94	186	18	14	16	17	15	16
40–49	100	131	231	20	19	19	22	20	21
50–59	89	117	206	17	17	17	15	15	15
>60	113	204	317	22	30	27	21	30	26
Total	513	677	1190	100	100	100	100	100	100
%	43	57	100				43	57	100

* Reference 27

economic hardship. Thus, districts with a high response rate had larger proportions of men born outside Moscow, more manual workers and a larger proportion of people reporting economic hardship (data not shown). The male sample might therefore be more prone to non-response bias than the female sample. Educational characteristics were not significantly different between high- and low response districts. However, the sample is nevertheless biased towards high educational groups when judged against external criteria (see below).

Estimating ORs for social inequalities in self-rated health
Table 5 gives odds ratios (ORs) for poor health for the above six social dimensions plus gender. To limit the size of the table we have reduced the number of categories to two or three for each variable. Separate odds ratios are given for administrative districts with relatively high and relatively low response rates. In both instances women report poor health more often than men do, and individuals of lower education or occupational class more often than those of higher education or class. Economic hardship is here the characteristic which

demonstrates the strongest association with self-rated health. Thus, results from this analysis have face validity.

In addition, an interaction test was performed to examine whether ORs are systematically different between districts with high a low response rates. This was not the case. There is a certain variation in age- and gender-adjusted odds ratios between these, but a formal test found no interaction, suggesting that this variation is not systematically biased by district level of non-response. Calculating ORs for the whole sample gave virtually identical results whether or not we adjusted for district (the largest difference was <4 %, data not shown). We thus consider these ORs estimates to be unbiased by non-response.

Discussion

The non-response problem in Moscow and Russia
Large randomized surveys were not common in Soviet Russia, but the series of surveys undertaken by the ISESP team (and its predecessors) in Taganrog 1968, 1978 and 1989 is an

Table 4. Distribution of men and women (n = 1190) across age and six social dimensions. Proportions in each category (%).

Variable	Category	Men	Women	All
Age group	18–29	23.2	19.4	21.0
	30–39	17.9	13.9	15.6
	40–49	19.5	19.4	19.4
	50–59	17.3	17.3	17.3
	60–	22.0	30.1	26.6
Birth place	Moscow	64.5	63.3	63.8
	Elsewhere, Russia	24.9	29.0	27.2
	Outside Russia	10.6	7.7	8.9
Marital status	Married*	66.3	49.7	56.8
	Divorced	8.3	13.6	11.3
	Widow(er)	4.5	21.2	14.1
	Single	20.9	15.2	17.8
Education	Low and general secondary	19.8	18.2	18.9
	Middle	23.5	31.6	28.2
	High and incomplete high	56.7	50.1	52.9
Occupational class	Un/semiskilled manual	10.8	14.1	12.6
	Skilled manual	26.8	12.8	19.1
	Un/semiskilled non-manual	14.3	23.7	19.5
	Skilled non-manual	29.5	42.5	36.7
	Leading position	18.5	6.9	12.1
Economic hardship	Yes	13.1	21.0	17.6
	No	86.9	79.0	82.4
Religious belonging	Orthodox	63.7	80.9	73.5
	Muslim	1.4	2.1	1.8
	Jewish	0.6	0.3	0.4
	Other	5.6	2.6	3.8
	None	28.8	14.1	20.4

* Includes cohabiting without formal marriage

exception. These also had exceptional response rates (>90%). In post-Soviet Russia response rates are lower, and tend to be falling, for instance in The Russian Longitudinal Monitoring Surveys[22].

Response rates in Moscow may be lower than elsewhere. Palosuo[5] had a response rate of 29% in her postal survey conducted in 1991. Her low response rate was explained as follows: *"One explanation for the low rate in Moscow is that the data collection took place in highly unstable political and economic circumstances… Also, there was less routine and more suspicion about participating in a mailed inquiry in Moscow… It was not possible to study the reasons for non-response in detail, but we can assess the representativeness of the data by some basic demographic parameters"*[5 page 1123]. MacKeehan[6] gave the response rate as 81.8% in her study conducted in 1991. She asserts that her sample is representative in terms of age, gender, education and district within Moscow. The Survey of Russian Marriages conducted in Moscow in 1996 reports a response rate of 56%. The authors state that the low response rate was due to the *"Russian fears of crime, and caution in dealing with strangers"*[23 page 40].

The Russian Longitudinal Monitoring Survey has conducted a series of interviews, based on visits, across Russia. RLMS

Round V in 1995 reports a "completion rate" of 56.9% in Moscow, compared to 84.3% in Russia as a whole. The word "completion rate", rather than non-response rate, is used to stress that "refusal", "no contact" and "vacant flat or dwelling" are included in the figure[22]. This distinction is highly relevant. We shall see below that figures for non-response in a Russian context in fact often do not include such failed contacts.

The New Russia Barometer (NRB), conducted more or less annually since 1992 in the whole of Russia, has had response rates varying from 83% (1993) to 53.8% (1996)[4]. The average response rate in the NRB surveys seems to be somewhere around 65–70%. However, it should be noted that households where nobody was at home were excluded when these response rates were calculated. When this group is included, response rates drop significantly. For example we recalculated the response rate for the oft-quoted seventh NRB study conducted in 1998, as 49.6% when the 1035 households where no one was at home (based on reference 3) were included, compared to 66.7% given by the authors.

If we apply this more strict definition we therefore find that high levels of non-response have been common in surveys undertaken in Russia. Judging from the RLMS, non-response may also be particularly common in Moscow. In most cases

Table 5. Odds ratios (95% confidence limits) for poor health† for gender and six social determinants. Comparing age- and gender-adjusted ORs in districts of high-response rate and districts of low-response rates, plus p-values for interaction between determinants and low/high response category.

Variable	Category	OR (95% c.l.) In high response rate districts	OR (95% c.l.) in low response rate districts	P-value for the interaction term
Gender*	Women	**1,62** (1,10–2,40)	**1,91** (1,31–2,79)	0,55
	Men**	**1.0**	**1.0**	
Birth place	Moscow**	**1.0**	**1.0**	0,55
	Elsewhere	**0.90** (0,59–1,38)	**0.83** (0,54–1,26)	
Marital status	Married**	**1.0**	**1.0**	0,37
	All other	**1,53** (1.00–2,33)	**1,04** (0,70–1,54)	
Education	Low or general secondary	**1,91** (1,07–3,43)	**2,11** (1,17–3,81)	0,85
	Middle	**1,07** (0,68–1,68)	**1,36** (0,87–2,14)	
	High and incomplete high**	**1.0**	**1.0**	0,50
Occupational class	All manual	**1,65** (1,00–2,72)	**1,65** (1,02–2,65)	
	Non-manual, unskilled or semiskilled	**1,41** (0,81–2,47)	**1,50** (0,86–2,61)	0,97
	Non-manual, skilled and leading position**	**1.0**	**1.0**	0,78
Economic hardship	Yes	**3.14** (1.60–6.17)	**1.94** (1.02–3.68)	0.27
	No	**1.0**	**1.0**	
Religious affiliation	Orthodox**	**1.0**	**1.0**	0,41
	Other religion	**0,97** (0,43–2,21)	**0,60** (0,29–1,26)	
	None	**0,68** (0,41–1,15)	**0,83** (0,52–1,30)	0,69

† Poor health includes the answers that are less than good; * Age-adjusted only
** Reference category; (Low response districts-1, 2, 6, 7, 9; High response districts-3, 4, 5, 8, 10)

the discussion and evaluation of non-response is poor or lacking, an observation also made by Buckley[10]. In fact, we found no study where this problem was thoroughly addressed. The fact that the characteristics of non-responders tend to be insufficiently recorded may contribute, as noted by Schmid et al[8]. The latter practice could be changed and improved which would result in a better understanding of any bias due to non-response and therefore make analyses of typical Russian surveys more convincing. Reserve lists, such as the one we used, provide new respondents and improve numbers, but do not solve the problem of establishing the direction of any bias due to non-response.

A good textbook in epidemiology or statistics[24] would suggest that the level of non-response is not the major problem, but rather whether or not the obtained sample is biased. In other words, we have to try to understand the processes whereby people decide not to take part, or by which we were unable to reach those flats and individuals sampled for interview. In Moscow, we conclude, fear of strangers and lack of trust in authorities are key factors.

Conclusions

High levels of non-response are a common problem in Russia, which is rarely adequately documented and discussed. Here we have considered two separate issues, related to a high level of non-response. 1) Did this corrupt the representativeness of the sample, and therefore bias estimates of prevalence rates? And 2) did this introduce bias in multivariate analyses?

1) For the six social dimensions reported in Table 4 sample characteristics may or may not match Moscow population characteristics. Comparing data on marital status in our sample with data published by Goskomstat[20] suggests a great similarity, except perhaps that the proportion of widows in our sample (21.2 %) is greater than in the target population (16.2 %). Education, on the other hand, is considerably higher in our sample (with 53 % reporting high or incomplete high education compared to 39 % as estimated by Mosgoskomstat[21]. No official data on birthplace and occupational class are published and it is not possible to assess bias in these cases. We collected data on monthly income, but these are notoriously difficult to compare with officially published income data[25]. For this reason we will follow our previous practice[16] and use actual consumption opportunities to assess people's degree of economic problems. In sum, representativeness may be a problem when using the sample to estimate the frequency of a measured characteristic in the target population. Non-response may bias sample means in certain instances but not in others. This problem is best judged from case to case.

2) Minor or medium-sized deviations from representativeness are not necessarily a problem in multivariate analysis. The problem arises when the multivariate relationship under study is systematically different among those responding and those not responding. Although we cannot know for certain whether or not this is the case, we can use an indirect method. The estimated ORs in Table 5 did not differ between high- and low-response areas. A formal test of interaction was negative, suggesting that ORs are not severely biased due to non-response. This method, as applied in Table 5, is helpful in judging the size of this problem in this or similar surveys. A lack of interaction between area non-response level and a specific determinant when studying a specific outcome is seen as evidence against there being a strong and systematic bias due to non-response.

In sum, in spite of the large non-response rate we see no obvious overall bias in estimates of the six social dimensions reported above, with the clear exception of education, since highly educated people are overrepresented. If non-response occurs more often among people and in areas with least trust in official institutions and fellow Moscow citizens, as we believe, estimates of the size of distrust in this study (as those given above) will be conservative. In multivariate analysis the problem of non-response bias is likely to be considerably smaller, but here too, this problem ought to be addressed in each specific analysis. In other words, surveys with high non-response can still be useful, at least for specific types of analysis.

Moscow has changed greatly since 1991. We know much too little about what this means for Moscow citizens. Surveys of its population encounter difficulties, not only because of a certain amount of distrust, fear, unwillingness or skepticism among the people; authorities may also take a negative view[26]. It thus seems more necessary than ever to carefully analyze the strengths and limitations of existing survey data in order to better understand and more clearly explain what is happening in the fast changing social realities of Moscow and Russia. The Moscow Health Survey of 2004 represents, we believe, such an opportunity.

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