



TELEPHONE METHODOLOGY FOR COMMUNITY SURVEYS

Health professionals require measures of intermediate outcomes and customer attitudes, needs, access and usage which are not available from routine data collections. The speed, flexibility and low cost of telephone surveys make them ideal for collecting such data. We used the Western Sydney Telephone Health Survey (WSTHS)¹ to test the feasibility of telephone methods for collection of such data. In this paper we will summarise the key issues relating to telephone methodology for community surveys and describe some of the findings of the WSTHS.

INTERMEDIATE OUTCOME MEASURES

Intermediate outcome measures are not available from routine data collections such as the mortality, hospital morbidity and cancer registry databases. The National Health Survey (NHS)² provides data on risk factors and health care service utilisation at five-year intervals, but the sample size is insufficient to detect small but important changes at a local level. Telephone surveys have been widely used for collecting data on intermediate outcomes, such as:

- behavioural risk factors, including cigarette smoking, alcohol use, driving behaviour, obesity, hypertension, physical activity and sexual behaviour³⁻⁷; and
- screening utilisation^{3,8}.

Large sample sizes are needed. For example, about 2,100 respondents are needed to detect a drop in prevalence of cigarette smoking from 30 per cent to 28 per cent (and be 95 per cent confident that the drop is real). This means other survey types are too expensive.

For the WSTHS a core questionnaire seeking demographic, major risk factor, morbidity and health service utilisation data was developed using the NHS² and 1989 National Heart Foundation Risk Factor Prevalence Survey⁹ as templates. A modular format was used. This will enable the addition of other questions to yield data on emerging public health issues in the future. We tested a drug and alcohol module in the WSTHS and a cardiovascular risk factor module in our more recent survey in the Wentworth Health Area¹⁰.

CUSTOMER SERVICE

Another application of telephone surveys is in measurement of customer attitudes, needs, access and usage^{11,12}. All service delivery agencies within the NSW Government have been asked to provide the people of NSW with a guarantee of service, detailing the agency's policy on customer service¹³. Telephone surveys can be used to identify customers' needs and particular features of services they value. Usage of and access to general practitioners, community health services and other service types, as well as hospital-based services, can be monitored. Such feedback would be a

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powerful tool in the development and monitoring of service standards, assisting management in making decisions about level of service, improvements in systems, and how to achieve a balance between conflicting priorities.

TELEPHONE COVERAGE

In 1986, 90.2 per cent of occupied private dwellings in NSW had telephones — an increase of 5 per cent from 1983¹⁴. This high rate of coverage limits the possibility of sampling bias. Comparisons of households with telephones and all households have shown a high degree of similarity in reports of illness and use of services^{15,16}. Households with and without telephones may differ, however. Australian households least likely to have a telephone are those with an unemployed head, people living alone, one-parent families and groups of unrelated individuals¹⁴. In the United States drug use rates are substantially higher among households without telephones¹⁷. Thus telephone surveys will provide reliable general population estimates but may not provide useful data on certain population subgroups.

TELEPHONE SAMPLING

Two general methods may be used for sampling:

- random-digit dialling (RDD); or
- random sampling from telephone directories.

In RDD, telephone numbers are generated at random, producing an unbiased sample of all numbers possibly in use in the target population. A major disadvantage of RDD is that computer-generated lists of telephone numbers may contain up to 80 per cent ineligible numbers, including disconnected or business numbers. Since residential numbers tend to share common digits, the efficiency of RDD can be increased by using cluster designs such as the Waksberg technique¹⁸. While increasing sampling efficiency and reducing costs, such designs introduce a sampling effect which increases the standard errors of the estimates obtained.

Random selection from telephone directories is a cost-effective sampling method. For the WSTHS, randomly selected numbers from the electronic white pages were bought at a cost of around 35 cents each¹. The major disadvantage of this method is that households with unlisted numbers are excluded from the sampling frame. In NSW this potential undercoverage bias is minimal. In 1991, 89.3 per cent of private occupied dwellings had private residential listings in the Telecom white pages¹.

RESPONDENT SELECTION

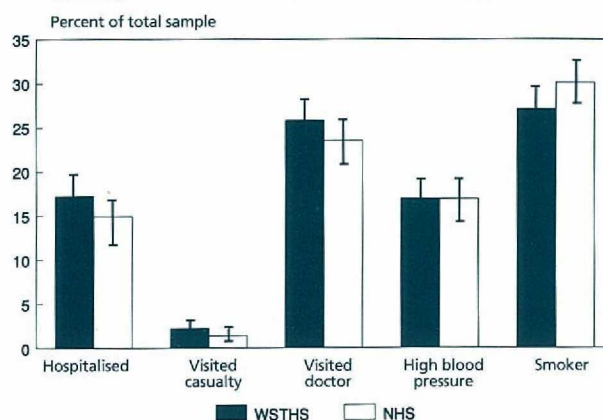
Interviewing the person who answers the telephone will result in a convenience sample from which little can be generalised. Use of a Kish Grid (a table containing randomly generated numbers for a given household size)¹⁹ eliminates this selection bias. Follow-up calls are required if the selected respondent is not available. Use of the Kish Grid increases telephone costs and non-response. Its use in the WSTHS raised the non-response rate by about 1.5 times¹.

RESPONSE RATES

Most health surveys comparing telephone and face-to-face interviews have found response rates 10-20 per cent lower

FIGURE 1

COMPARISON OF POPULATION ESTIMATES FROM THE WESTERN SYDNEY TELEPHONE HEALTH SURVEY (WSTHS)¹ AND THE NATIONAL HEALTH SURVEY (NHS)²



for telephone interviews¹⁵. Comparisons of respondents in the two survey types have shown that telephone respondents tend to be younger, better educated and have higher incomes¹⁵. This was true also of WSTHS respondents when compared with socioeconomic profiles expected from the NHS² and ABS 1989 population estimates²⁰, though these differences were not statistically significant. Findings of the WSTHS were presented as estimates adjusted for the age and sex profiles of ABS 1989 population estimates.

A number of strategies may be used to improve response rates, including prior notification and inducements, attempts to convert non-responders, and mixed-mode surveys in which telephone refusers are interviewed face-to-face. In the WSTHS, half the 2,000 sample households were randomly assigned to receive a letter before telephone contact. Response rates were 76.2 per cent (95 per cent CI 73.2-79.2) for those who received a letter and 59.7 per cent (95 per cent CI 56.2-63.2) for those who did not. The marginal cost per percentage increase in response rate achieved by prior mail contact was around \$46.00¹. All sample households in our Wentworth Health Survey were sent letters and a response rate of 79.6 per cent was achieved², confirming the utility of this method for increasing response.

EXTERNAL VALIDITY

Several studies have compared reports of health status, morbidity and health care utilisation in face-to-face and telephone interviews. Most have found little or no difference between the two interview modes¹⁵. We compared estimates from the WSTHS with those for the same population from the interviewer-administered NHS for several marker variables, including current smoking, self-reported high blood pressure, hospitalisation, doctor consultations and education profiles. There were no significant differences in the population estimates for any of the variables examined (see Figure 1)¹.

COSTS

Complete costs for the WSTHS, including questionnaire development, quality assurance measures, data entry and analysis and report writing, totalled about \$30.00 per completed interview¹. This is far less than the cost of a

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comparable face-to-face questionnaire administered by an interviewer.

CONCLUSIONS

Telephone surveys are a valid, flexible, cost-effective method for obtaining data on defined populations. They are ideal for obtaining measures of intermediate outcomes and customer attitudes, needs, access and usage, which are not available from routine data collections. Repeated surveys at regular intervals, using a core questionnaire with detachable modules, have the potential to provide invaluable information for planning and evaluation of health services.

We need also to assess the possible contribution of such data as we develop outcome goals and targets, progress indicators and appropriate practice guidelines within the framework of the NSW Health Outcomes Initiative²¹.

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INFECTIOUS DISEASES

MEASLES

During 1993, 15 out of 16 Health Areas and Regions, representing 97 per cent of the NSW population, have received notifications for measles. This indicates widespread transmission of the measles virus throughout NSW.

The annual notification rate for the State is 9.3 per 100,000 population. Orana and Far West Region has received notifications at a rate of 70.6 per 100,000 population.

WHOOPIING COUGH

During 1993, 15 out of 16 Health Areas and Regions have received notifications for whooping cough. As with measles, there has been widespread transmission of *Bordetella pertussis* this year.

The annual notification rate for the State is 6.7 per 100,000 population. Central West Region has received notifications at a rate of 28.6 per 100,000 population.

RUBELLA

During 1993, 14 out of 16 Health Areas and Regions, representing 92 per cent of the NSW population, have received notifications for rubella. No notifications for rubella were received for April.

The notification rate for the State for 1993 is 5.5 per 100,000 population. This compares with a rate of 1.4 per 100,000 population for the same period in 1992 — an increase of more than 300 per cent.

LEGIONNAIRES' DISEASE

Only one notification for Legionnaires' disease was registered on the Infectious Diseases Surveillance System for April. A further eight notifications were made to Public Health Units, but have not been formally received by Epidemiology and Health Services Evaluation Branch. This total of nine cases compares favourably with the 46 notifications received for April 1992 — 26 of which were linked epidemiologically to the Fairfield business district, while a further 20 cases were 'sporadic'.

Q FEVER

Extensive testing for Q fever has been carried out recently in association with the Q fever vaccination program in the meat industry.

A 54 per cent increase in notifications for Q fever has been received in 1993 over 1992. The notification rate for the State for 1993 is 4.2 per 100,000 population.

Orana and Far West Region has received notifications at a rate of 74.9 per 100,000 population.

INFLUENZA SURVEILLANCE

The Epidemiology and Health Services Evaluation Branch has received influenza surveillance data from seven PHUs for the NSW GP Sentinel Surveillance Network so far for 1993. Levels of influenza-like illness remained low, below an average of 0.8 per cent of consultations, with no increase during April. No PHU has reported a rate of greater than 2 per cent of consultations in 1993.

Data on school absentee rates have been received from two PHUs, and they have shown no tendency to increase in 1993. Eastern Sydney Area Laboratory Surveillance System did, however, report eight isolations of influenza A in April, doubling the total for the year.