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Phone tracking in a follow-up study

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Repeated data collection in cohort studies may be constrained by feasibility concerns, cost and participant burden (Samet & Muñoz 1998). However, efforts spent in tracing cohort members might pay of as obtaining repeated measures will generally improve the precision as well as the validity of the study results. Thus, determining the most effective strategies to track participants is an important research purpose. Some strategies to maximize retention and keep track of cohort members have been considered in some studies: the frequency of tracing; the selection, training and supervision of staff and data collectors; bonding, the participants in a longitudinal study need to identify and bond with the study; the combination of different methods of tracking to hard-to-find participants; the use of proxies to obtain follow-up information, etc. (Hunt & White 1998). Nevertheless, few studies have described the process of tracing participants, cost, efficiency in tracing, the telephone use and its relation to the response rate (Galobardes et al. 1998). To provide more data on tracing participants in epidemiologic studies, we analyzed the telephone tracking process of the Cornellà Health Interview Survey Follow-up (CHIS.FU) Study.

Methods

The Cornellà Health Interview Survey Follow-up (CHIS.FU) Study (Garcia et al. 2003) is a prospective cohort study of a representative sample (a simple random sample of 2500 subjects: 1263 women and 1237 men) of the non-institutionalized population (all ages) from Cornellà de Llobregat, a city located on the metropolitan area of Barcelona, Catalonia (Spain) with a total population of 85061 inhabitants. The inclusion of the participants in the cohort was based on the interview date of the Cornellà Health Interview Survey (CHIS) held in 1994. Detailed information of the baseline and follow-up studies is available elsewhere (Garcia et al. 2003). Previously to the follow-up, we implemented a computerized record linkage with the Local Census of Cornellà to update the address and vital status of all 2500 participants. First, we used a deterministic method based on the name and surnames, and afterwards a probabilistic method based on the partial correspondence of the same variables. The record linkage detected 91 deaths and 259 emigrations. Thus, we attempted to trace the remaining 2150 cohort members to conduct the telephone follow-up interviews. Finally, we gathered information about 70% of the cohort members in the phone follow-up interview conducted in 2002 (Garcia et al. 2003).

After a pilot study, we established a detailed phone protocol with four shifts to trace and interview the subjects: 1st shift from 10:00 to 13:00, 2nd shift from 12:00 to 14:00 (overlapped with the 1st shift), and after lunch time from 15:00 to 16:00, 3rd shift from 16:00 to 19:00, and finally the 4th shift from 19:00 to 22:00. An extra shift for those non-traced in the previous shifts was established during weekends. Interviews were conducted by four interviewers (one interviewer per shift) who were previously trained using role-playing techniques. To begin the tracking process, subjects were randomly allocated in waves of 20 to each of the interviewers each Monday by the study coordinator. Thus, the first attempt to trace subjects could be made in any day of the week (excluding the week-

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end). To obtain a complete telephone interview a maximum of 15 calls were made. Attempts to reach the participants were made in all shifts and during weekends and again after four weeks. The information collected and incidences during phone tracking were registered in ad hoc designed paper questionnaires (no CATI system was used).

To make the phone call, interviewers dialed the number and held the line for seven full tones. A record of the result was left after each call. After three calls in a same shift (and in different days and hours) if it had not been possible to trace the individual or a relative, the questionnaire was passed to another phone shift.

If the phone number was incorrect all the process started again. First, we checked mistakes when dialing. We also checked if an alternative telephone number for the study participant was available and, if not, the telephone was searched through white pages, telephone assistance, and the local census. Finally, we sent a questionnaire by mail to those cohort members that could not be reached by telephone.

The variables used to analyze the phone tracking characteristics were the three types of questionnaire, the number of telephone calls, the proportion of inaccurate information (incorrect phone numbers), the weekday when the subjects were traced, and the time of day (shift) when the subjects were traced. We finally analyzed 1920 subjects who were traced by telephone (Fig. 1).

Results

We made 9335 phone calls (4646 calls to trace 1039 men and 4689 to trace 1082 women). An average of 4.0 (SD 4.0) phone calls were made to contact the subjects who were finally traced (n = 1920) in comparison to 8.4 (SD 7.1) phone calls for the non-traced (n = 201) cohort members ($p < 0.05$). Most subjects (62.0%) were traced within one to three phone calls whereas 9.0% needed 10 or more phone calls to be traced.

Despite updating the address and telephone number of the cohort members previously to the follow-up interview, we

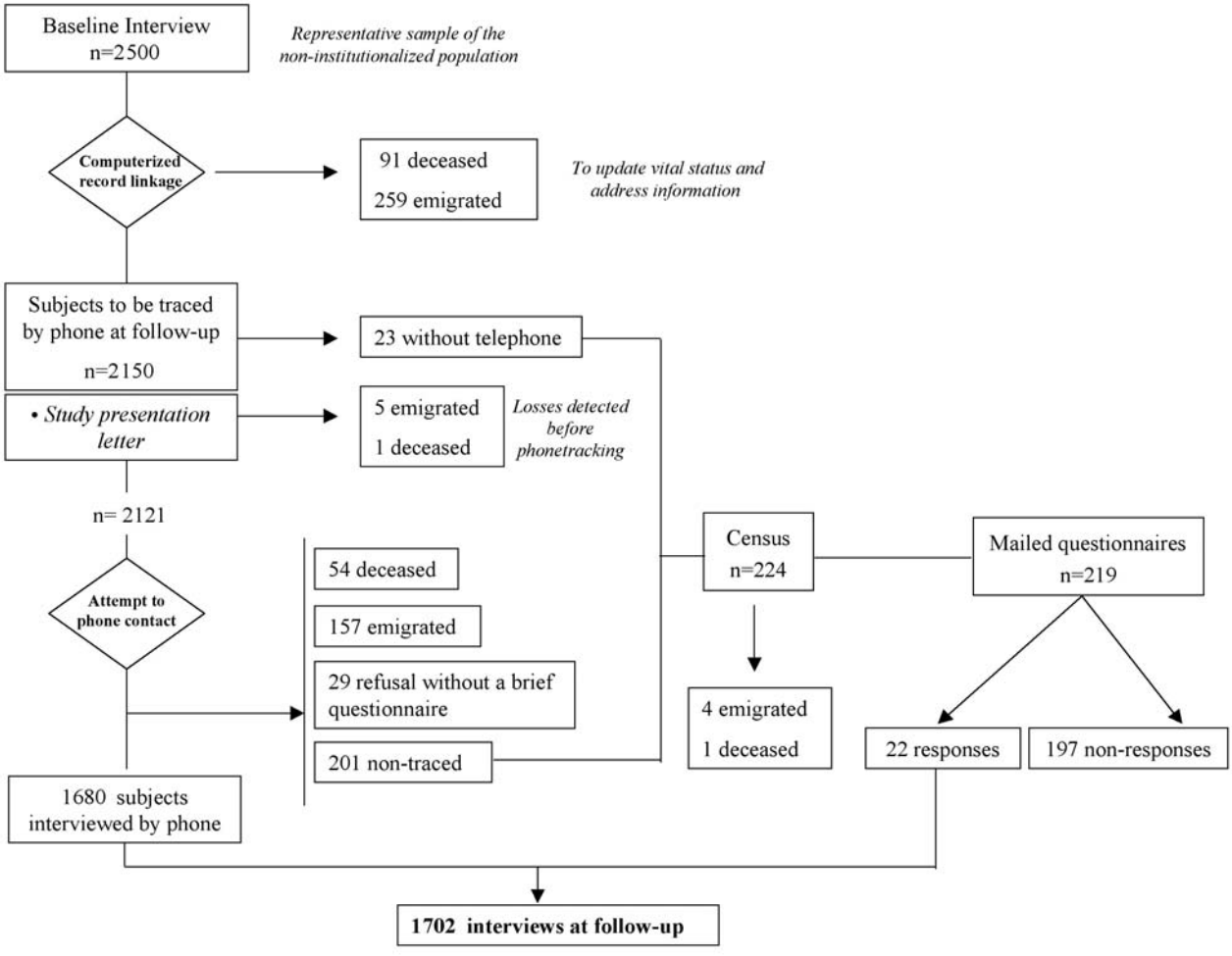

Figure 1 Process of phone tracking in the Cornellà Health Interview Survey Follow-up (CHIS.FU) Study

had inaccurate phone number information on 365 (17.0%) participants. We could get the correct telephone number by searching through white pages, telephone assistance, and the updated (year 2001) local census in 260 cases (12.1% from the overall cohort members). However, in 105 cases we could not update the telephone number (almost 50% of the non-traced cohort members).

The proportion of participants traced according to the day of the week slightly decreased from Monday (20.5%, 95% CI: 16.0%–24.5%) to Friday (15.1%, 95% CI: 10.7%–19.5%), although the difference was not statistically significant. Only 2.3% of the cohort members were interviewed during the weekends.

The participants' tracking distribution according to phone shifts was quite similar. However, we found some differences according to baseline characteristics such as sex, age, occupation, and educational level (Tab. 1).

Discussion

While almost two thirds of study participants were interviewed after one to three telephone calls, tracking of about 9% of the participants required 10 or more telephone calls. The analysis of time of the day when participants were interviewed shows some differences that might be helpful in planning the field work in subsequent follow-up interviews in this study or in any study using telephone interviews.

The telephone as a survey approach can achieve high participation rates and can produce accurate and detailed information on the research questions of interest (McHorney et al. 1994). Telephone surveys are relatively expensive but are preferable for individuals known to have poor literacy skills or are otherwise unable to respond to written questionnaires (Marcus & Crane 1986; Gillis & Doordan 1989) as in our study. Cornellà is a town mainly of low-middle socio-economic status, and almost two thirds of the cohort members declared a low socio-economic status. In addition, ease of response, opportunity to clarify questions, and encouragement of completion may make telephone interviews superior to mail questionnaires (Gillis & Doordan 1989; Ottman et al. 1988). In addition, the response rate to mailed questionnaires is less than 60% in our context (Galobardes et al. 1998).

Research to determine the times that yield the highest rates of interviews with respondents is essential to optimize the resources of the health studies (Aday 1989). The characteristics of the participants can be useful to estimate the budget for tracking when planning to conduct such a research. Moreover, obtaining baseline information of the cohort members is relevant to find out the best times to contact them.

The assessment of logistic aspects on field work may help in planning and designing further studies. An attempt to distribute subjects according to selected sociodemographic characteristics may facilitate the tracking (i. e., allocating interviews of employed subjects to phone shifts after 18:00). Moreover, interview analysis during long field works (of one year or longer) may also contribute to improve all the tracking and interview process.

Table 1 Distribution of males and females traced by telephone for follow-up according to selected baseline characteristics and time. The Cornellà Health Interview Follow-up (CHIS.FU) Study

Baseline characteristics			Time									
			9:00–12:00		12:01–15:00		15:01–18:00		18:01–21:00		21:01–24:00	
		n	n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Total		1917*	382	(16.6)	476	(20.7)	436	(19.0)	466	(20.3)	157	(6.8)
Sex	males	917	150	(16.4)	218	(23.8)	201	(21.9)	260	(28.4)	88	(9.6)
	females	1000	232	(23.2)	258	(25.8)	235	(23.5)	206	(20.6)	69	(6.9)
Age in 1994	0–14	287	53	(18.5)	83	(28.9)	71	(24.7)	54	(18.8)	26	(9.1)
	15–44	781	128	(16.4)	175	(22.4)	162	(20.7)	223	(28.6)	93	(11.9)
	45–64	598	129	(21.6)	151	(25.3)	148	(24.7)	139	(23.2)	31	(5.2)
	≥ 65	251	72	(28.7)	67	(26.7)	55	(21.9)	50	(19.9)	7	(2.8)
Employed in 1994**	yes	565	93	(16.5)	115	(20.4)	125	(22.1)	165	(29.2)	67	(11.9)
	no	1260	263	(20.9)	338	(26.8)	286	(22.7)	285	(22.6)	88	(7.0)
Educational level in 1994**	< 10 years old	167	37	(22.2)	41	(24.6)	41	(24.6)	40	(24.0)	8	(4.8)
	less than primary	329	77	(23.5)	84	(25.1)	75	(22.9)	82	(25.1)	11	(3.4)
	primary	1024	207	(20.2)	258	(25.2)	228	(22.3)	235	(22.9)	96	(9.4)
	secondary	336	58	(17.3)	78	(23.2)	75	(22.3)	88	(26.2)	37	(11.0)
	university	60	2	(3.3)	16	(26.7)	16	(26.7)	21	(35.0)	5	(8.3)

* We did not record the time shift in three cases

** The sum does not up the total due to some missing values

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