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Unannounced telephone interviews: A useful and positively received tool in the reinforcement of lifestyle intervention

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Objectives: Reinforcement is critical in dietary counseling, but is also time demanding. We evaluated the acceptability of frequent telephone interviews, including a 24-hour dietary recall, as a means of reinforcement after lifestyle intervention in healthy subjects at risk of diabetes. The aim of this report is to assess the following questions: Was the chosen frequency and duration of telephone reinforcement appropriate? What were the positive and negative aspects of receiving telephone interviews?

Methods: Seventy-seven nondiabetic relatives of patients with type 2 diabetes were included in a randomized controlled intervention study in which they received dietary education. Unannounced telephone calls were placed to follow adherence and for encouragement and support. After two years of intervention, the perceived appropriateness of the different aspects of receiving telephone interviews were evaluated by postal questionnaire.

Results: Telephone reinforcement was positively received by the participants. Relatively frequent telephone calls, as many as three times per month, were not considered disturbing or time consuming. Participants became aware of their own dietary habits through the interviews, which they appreciated. They found duration of follow-up between one and five years appropriate.

Conclusions: Telephone interviews can be applied in lifestyle intervention programs in healthy at-risk individuals in which time constraints may otherwise prevent active persons from participating.

Keywords: telephone interviews, reinforcement, lifestyle, intervention, acceptability

Background

Dietary counseling is based on the interpersonal exchange between the dietitian and patient. Face-to-face consultation is the traditional way to perform dietary counseling as well as reinforcement. Weight reduction programs have shown that attendance at treatment sessions and adherence are strong predictors of long term success.[1,2] However, full time employment has been shown to be a strong predictor of premature withdrawal from treatment,[3] and more flexible and creative ways to maintain contact and provide information are needed.[1] Technical advances have made alternative means of communicating with patients possible through telephone, email, and the Internet.[4]

One way of addressing the emerging epidemic of obesity and diabetes is through lifestyle intervention programs. Such programs require large efforts from both the dietitian and the target group.[5,6] Telephone interviews or email contact have been used in lifestyle prevention and weight-reduction programs[5,7–9] as well as in other forms of patient reinforcement.[10] This form of reinforcement is likely to be cost-effective compared to face-to-face reinforcement and will even allow for an increase

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in frequency of contacts. Other potential benefits are the flexibility, increased awareness, and the interviews possibly help to prevent relapses. However, frequent telephone contacts could possibly be "intruding" on participants. To our knowledge, the acceptability of telephone interviews as a reinforcement method has not previously been evaluated. It is therefore necessary to examine how this reinforcement method is received.

We performed a lifestyle intervention trial in healthy subjects at risk of diabetes where reinforcement was performed through telephone interviews. Desired dietary and metabolic changes were achieved through the program.[11–14] Participants' opinions were evaluated after two years of intervention. The aim of this report is to assess the following questions: Was the chosen frequency and duration of telephone contacts appropriate? What were the positive and negative aspects of receiving telephone interviews?

Methods

The study is part of a controlled intervention trial with three arms: diet group (D), diet and exercise group (DE), and control group (C). Participants were followed during two years of intervention (Figure 1). For ethical reasons, the control group acted as controls for only one year before receiving diet intervention and was then followed for two further years (renamed group D2). One hundred nondiabetic persons aged 25–55 years with at least one first-degree relative (parent or sibling) with type 2 diabetes were recruited through their relatives with diabetes or through advertisement in local newspapers and screened for the study. Screening consisted of an oral glucose tolerance test, general health examination, and collection of dietary data. Exclusion criteria were diabetes mellitus,[15] body mass index (BMI) > 35 kg/m^2, and diseases or medications affecting glucose or lipid metabolism. Out of 77 subjects who were included in the study, 64 completed the two-year examination and were invited to participate in the current evaluation. Out of the 13 drop-outs, five individuals dropped out due to disease or because they moved and three individuals dropped out while they were in the control group. Recruitment, randomization, and the intervention program has previously been described in detail.[11]

With a typical Swedish diet as the starting point, goals were devised to achieve a dietary composition based on the Nordic Nutrition Recommendations (NNR).[16] Dietary advice aimed at reducing saturated fat (goal, 10% of energy [E%]), increasing intake of monounsaturated fat (goal, 10–15 E%) and of n-3 fatty acids (goal, 1 E%) from fatty fish and from vegetable origin, increasing intake of vegetables (one third of lunch/dinner plate),[17] fruits, and soluble as well as insoluble fiber. In addition, increased intake of low glycemic index (GI) foods and reduced intake of high GI foods was encouraged. Fatty acid composition of erythrocyte membranes was studied as an objective marker of dietary change. All participants were aware that this objective marker was being studied. All groups (D, DE, and D2) received exactly the same dietary education.

Two dietary education sessions were held 1–2 weeks apart at study start in a group setting with 3–11 participants. Each session lasted about 90 minutes and consisted of three elements. Firstly, a theoretical part with presentation of dietary advice and their background was given. Examples of recommended foods were then served. There was time

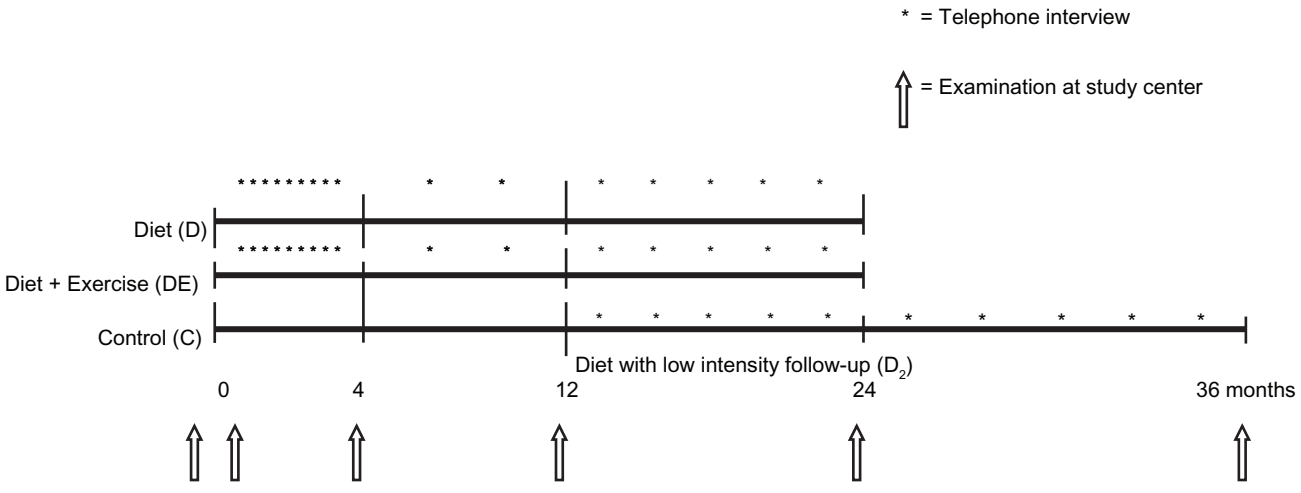

Figure 1 Study design.

for questions and a discussion about food choice. Additional topics for discussion were meal pattern, importance of regular meal frequency, and potential side effects of increased fiber intake.

In addition, group DE was encouraged to increase physical activity with at least 30 minutes, 4–5 times per week by walking or more intensive activities.

Unannounced telephone calls were used both to encourage participants and to follow lifestyle intervention adherence. The participants were informed that they would be interviewed by phone, but not when and how often. Prior to study start they filled in a short questionnaire about what hours they did not want to be called. The telephone calls were performed on all days of the week, including weekends. Interviews were more frequent (three interviews/month) during the first 16 weeks of the study in groups D and DE as compared to the rest of the study period (one interview per three months). Group D2 had the lower frequency of reinforcement during the entire intervention period (Figure 1). The goal was to complete a total of 16 interviews per participant in groups D and DE and 10 interviews per participant in group D2 during the two-year intervention period. All participants received unannounced telephone contacts until the predetermined number of interviews was obtained. A telephone interview lasted on average 15 minutes. The principal investigator (HKB) and two dietitians performed the interviews. A 24-hour dietary recall was performed in the beginning of all interviews. The recall was primarily qualitative with portion size given as number of units/portions consumed. At the end of every recall, a food list was recited to help participants remember easily forgotten foods like snacks, fruits, and drinks. The recall was a good starting point for a discussion about food choice and perceived barriers to dietary change. The length of the discussion between the interviewer and the participant depended on the participant's wish to discuss and receive motivation.

In group DE, each telephone interview also included a 72-hour leisure time physical activity recall. Participants were asked about type of activity (walks, bicycling, other exercise) and duration (hours, minutes) during the three consecutive days preceding the interview.

A questionnaire evaluating the method of reinforcement was mailed to participants within one year after end of follow-up. The evaluation was performed anonymously and the questionnaire was mailed out by a person not involved in delivering the intervention. The same person received the questionnaires and participants were ascertained about their anonymity. The questionnaires had predefined answers or, in a few cases open answers, and contained four questions regarding perceived and desired frequency of telephone interviews, one question about the duration of follow-up, and two questions about positive and negative aspects of receiving telephone interviews. In one question, the importance of telephone interviews was compared to other possible motivational factors. Finally, participants were asked to give a total evaluation of the reinforcement method.

The study was approved by the Ethics Committee at Gothenburg University, Sweden. All participants gave written informed consent at entry.

Results

The mean age of the 64 subjects who were invited to participate in the evaluation was 43 years (standard deviation [SD] = 8) and mean BMI was 25.6 (SD = 3.1). Fifty-nine subjects (92%, 43 men, 16 women) returned the questionnaire; age groups 25–35 years (n = 9), 36–46 years (n = 21) and 47–57 years (n = 29).

Frequency of follow-up

The percentile distributions of the estimated and requested frequencies of telephone calls are presented in Table 1.

Duration of follow-up

Participants were asked the following question: "For how long would you want to receive a follow-up by telephone interviews?" Answers could be given in weeks, months, and/or years or as the alternative "no telephone follow-up". The median requested duration of follow-up was two years (range 1–5 years). Seven percent (n = 4) did not want to receive telephone reinforcement.

Positive and negative aspects of unannounced telephone interviews

The evaluation of positive and negative aspects of receiving telephone interviews are presented in Table 2. The positive aspect most frequently reported by participants was that they became conscious of their dietary habits. The negative aspect most frequently reported was that it was hard to remember what they had eaten.

Motivational factors

Patients were asked the question: "Which of the following factors do you consider important for motivating adherence?" Of respondents, 58% selected "Unannounced telephone interviews", 61% selected "Feedback from laboratory visits/test", 32% selected "Reminders by mail with recipes", and 15% stated "Other".

Table 1 Estimated and requested frequency of telephone interviews (percent of participants)

	1–2 times per week	Three times per month	Twice per month	Once per month	Once every two months	Once every three months	More seldom
How often do you *recall* being interviewed during the first 16 weeks of the study (intensive period)?[2]	2%	**36%**[1]		53%			9%
How often would you have *preferred* to be interviewed during the first 16 weeks?[3]	24%	48%	12%	16%	–	–	–
How often do you *recall* being interviewed during the less intensive period (during the final 20 months)?[2,4]		2%		27%		**61%**[1]	10%
How often would you have *preferred* to be interviewed during the final 20 months?[3]	–	6%	3%	41%	13%	37%	–

Notes: 1. Actual frequency is given in bold. 2. Shaded areas were not options in the questionnaire. 3. This question had open answers. 4. Group D2 received only this less intensive frequency and thereby only this question about frequency.

Total evaluation of the method

Patients were asked the question: "What is your total impression of telephone interviews as reinforcement method?" Of respondents, 92% selected "positive" and 8% selected "Both positive and negative". Those who selected "both positive and negative" had also selected "hard to remember what I had eaten" as the only negative aspects of receiving unannounced telephone interviews. No patients gave the answers "negative" or "do not know".

Discussion

The importance of attendance and frequency of reinforcement has been documented in weight reduction programs,[1,2] although not with consistent results.[18] However, frequent reinforcement, including use of telephone contact, was used in the Diabetes Prevention Program (DPP) in which diabetes incidence was reduced by 58%.[5,19] The frequency of sessions in the DPP was similar to the interview frequency during the initial (intensive) phase of our study, while the subsequent

Table 2 Positive and negative aspects of unannounced telephone interviews (n = 59)

What did you find positive about the telephone interviews?	**Percent of participants**	**Number of participants**
Nothing was positive	0	0
I became conscious of my own dietary habits	86	51
I felt obliged to follow the advice	25	15
I received encouragement and support	47	28
Gave the possibility to ask questions	54	32
I was reminded of participation in the study	47	28
What did you find negative about the telephone interviews?		
Nothing was negative	54	32
I felt obliged to follow the advice	0	0
Hard to remember how much I had exercised	11	2
Hard to remember what I had eaten	46	27
Too time consuming	0	0
It was disturbing	2	1
Gave me a bad conscience	7	4

contacts were more frequent in the DPP. Results from the two-year examination in our study[13] indicate that those who received the initially frequent reinforcement showed larger improvements in lifestyle and metabolic variables compared to group D2, although not statistically significant.

Generally, the participants found the telephone calls motivating and requested a higher reinforcement frequency than they recalled, indicating that an even more intensive reinforcement would be possible if desirable. Noteworthy is that none found the interviews time consuming and very few found them disturbing, indicating that this method can be applied in lifestyle intervention programs in healthy at-risk individuals where time constraints may prevent active persons from participating.

One limitation of this study is the problems of recall bias. Many of the participants underestimated the frequency of telephone calls. This may be because they were not able to remember as long as two years ago. However this underestimation would not be likely if the participants considered the interviews a burden.

The questionnaire evaluating participants' acceptability of unannounced telephone interviews was especially designed for this study. Unfortunately, the validity and reliability has not been tested due to practical reasons.

Protecting the anonymity of the participants was important to obtain reliable answers. The participants were well informed and ascertained about their anonymity and we therefore find it likely that the participants felt they had the ability to express negative as well as positive views about the telephone calls.

The generalizability of our results must be discussed since we have reason to believe that only highly motivated individuals volunteered for the study, independent of recruitment method. We therefore limited our results to apply to individuals who voluntarily participate in intervention and who are highly motivated. We should also point out that this method may not work in countries were insurance reimbursement does not cover telephone counseling.

It should also be noted that our findings only apply to those who completed the two-year study. The 13 individuals that dropped out did not participate in the evaluation. We do know, however, that out of the 13 drop-outs, at least eight subjects dropped out because of reasons unrelated to intervention or reinforcement.

Conclusions

Reinforcement of lifestyle intervention through unannounced telephone interviews (with diet and exercise recall) was positively received in a healthy population at risk of diabetes. The most positive aspect of the interviews was that the participants became aware of and reflected on their dietary habits as well as became motivated to adherence. Relatively frequent telephone calls, as much as three times per month, were not considered disturbing or time consuming. Participants found the duration of follow-up between one and five years appropriate.

Disclosures

The authors report no conflicts of interest in this work. HKB participated in designing the intervention study and was responsible for carrying out the intervention program as well as performing this evaluation and writing the manuscript. ÅS participated in performing telephone interviews, designing the evaluation questionnaire, analyzing the data, and helped draft the manuscript. RAL participated in designing the intervention study, performing this evaluation, and helped draft the manuscript. Financial support was given by The Swedish Diabetes Association. We thank Else H Johanson for excellent help with telephone interviews and counseling.

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