

Effects of a Home Visiting Program for Older People with Poor Health Status: A Randomized, Clinical Trial in the Netherlands

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(See editorial comments by Drs. Andreas Stuck and Robert Kane, pp 561–563)

OBJECTIVES: To evaluate the effectiveness of a home visiting program on health-related measures in a population of older people with poor health status.

DESIGN: Randomized, clinical trial.

SETTING: Community-dwelling citizens in the Netherlands.

PARTICIPANTS: Three hundred thirty people aged 70 to 84 randomly assigned to an intervention group (n = 160) or a control group (n = 170).

INTERVENTION: Eight home visits, lasting 1 hour or more, with telephone follow-up, over an 18-month period, conducted by experienced home nurses under supervision of a public health nurse; key elements of the (systematic) visits were assessment of health problems and risks, advice, and referral to professional and community services.

MEASUREMENTS: Self-rated health, functional status, quality of life, and changes in self-reported problems.

RESULTS: No differences were found between the intervention and control group in these and other outcome measures at the end of the intervention period (18 months).

CONCLUSION: The home visiting program did not appear to have any effect on the health status of older people with poor health and are probably not beneficial for such persons. *J Am Geriatr Soc* 56:397–404, 2008.

Key words: community care; home visiting; health visiting; frail older people; geriatric assessment and follow-up

With the growth in the aging population, home visiting programs have been developed aimed at improving

the health and independent functioning of older people and subsequently reducing outpatient care and hospital and nursing home admissions. In several countries, including Denmark, Australia, and Japan, home visiting programs are part of the national policy. The United Kingdom withdrew this policy in 2004. There is still an ongoing public health debate as to whether home visits should be incorporated into regular care for older people. The findings of trials on the effects of home visits have been inconsistent.^{1–4}

Although home visits for a high-risk population seems to be a promising approach, the results are mixed; seven controlled studies showed positive effects,^{5–11} but six other trials did not.^{12–17} A trial in the Netherlands (N = 580) showed that preventive home visits do not seem to be useful for the general population of older people, although a post hoc subgroup analysis indicated that the visits seemed to be effective for those with poor perceived health status at baseline.¹⁸ It was therefore decided to test this finding in a new trial, focusing entirely on older people in poor health. Details of the trial design have been published elsewhere.¹⁹ This article is a report on the effectiveness of the program on health-related measures. The effects on care utilization and a cost-benefit analysis will be reported upon completion.

METHODS

Participants

Eligibility of participants was determined through a questionnaire mailed in November 2002 to nearly 5,000 people (aged 70–84) living at home in the south of the Netherlands (Sittard and surroundings). Persons who reported their health status as moderate to good (a score of ≥ 6 on a scale of 1–10), who already received home nursing care on a regular basis, or who were on a waiting list for admission to a nursing home or home for older people were excluded. After the screening procedure, 160 persons were randomly allocated to the intervention group and 170 to the control group.¹⁹

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Sample Size

The sample size was calculated from data of a previous home visiting study in the Netherlands.¹⁸ Based on a 0.9 power to detect a difference (at the two-sided 5% level) of 20% or more between the study groups on self-rated health, with an assumed loss to follow-up of 30%, 150 participants were required in each group.

Randomization

Before randomization, the 330 participants were divided into two groups: couples ($n = 46$) and those for whom this did not apply ($n = 284$). In this way, it was ensured that eligible persons who lived together were always allocated to the same study group. The 23 couples were distributed over three strata on the basis of their (summed) score on functional status. The other 284 participants were stratified into eight strata based on three prognostic factors: functional status, health change, and prior contact with a medical specialist. After stratification, the random allocation sequence was conducted using a computer-generated randomization list with a block length of 4.¹⁹

Intervention

The program consisted of eight visits over an 18-month period. Participants in the intervention group received a visit approximately every 2 months, always from the same nurse. The visits lasted between 60 and 90 minutes. To increase adherence, the nurses contacted the elderly people by telephone 1 to 4 weeks after each visit. Three experienced home nurses (auxiliary community nurses) from a local home care organization were appointed half time for the study, and they conducted the visits under the supervision of a public health nurse (community nurse). The nurses followed a structured protocol to assess health problems and risks by interview. The nurses first recorded the problems as indicated by the participants. The EasyCare Questionnaire and additional checklists on a variety of topics were then used to detect further problems.²⁰ As part of this, the nurses could use diagnostic instruments for, for example, depressive complaints and mobility problems. No physical examinations were performed, because the home nurses were not qualified to do so. After the assessment, advice was given, or the elderly people were referred to professional and community services.

The participants' general practitioners (GPs) agreed to cooperate with the study and were kept informed at regular intervals. They received an overview of all treated problems for each participant in the intervention group, including the accompanying recommendations and results of the interventions. The GPs were asked for their comments or advice, and in this way they could become involved if they wanted to. In the case of urgent problems, the nurses contacted the GPs according to standard communication procedures between the home care organizations and GPs.

The nurses were not part of a multidisciplinary team, but advice could be obtained from specialists within the home care organization (e.g., a dietitian, a diabetes specialist, and an occupational therapist). A nurse geriatric specialist from the local hospital could also be consulted to discuss cases. Further details of the program can be found in the design article.¹⁹ The home visits took place between

February 2003 and October 2004. The control group received usual care; participants could use or apply for all available care within the Dutch healthcare system.

Outcome Measures

It was expected that the visits would improve the health status of the participants from baseline to 18 months (end of the intervention period). The primary health-related outcome measures were self-rated health, functional status, activities of daily living (ADLs), instrumental activities of daily living (IADLs),²¹ quality of life, two subscales from the Medical Outcomes Study 20-item Short Form Survey on mental health and social functioning, one item from RAND-36 on health change related to the start of the study, and changes in three self-reported problems, the first being the main problem. These were measured using mailed questionnaires at 12, 18, and 24 months (the last being 6 months after the end of the intervention). The screening questionnaire also provided baseline measurement for the primary outcomes. In addition, secondary outcome measures were gathered on health complaints,²² depressive complaints,²³ cognitive status,²⁴ mastery,²⁵ social support,²⁶ loneliness,²⁷ and medication. These were measured after 18 months through individual interviews conducted by six trained, independent interviewers, blinded to group allocation. The municipality supplied mortality data over the study period.

Statistical Analyses

The analyses were conducted according to the intention-to-treat principle. The primary outcomes self-rated health, functional status, and quality of life (mental health) were analyzed using a linear mixed-effects regression model within SPSS, version 13.0 (SPSS, Inc., Chicago, IL) at 12, 18, and 24 months. An unstructured covariance structure was used, and fixed effects were examined for the interaction between group and time. The outcomes quality of life (social functioning and health change) and changes in self-reported problems were analyzed using a two-level (time points and participants) proportional odds model within the STATA program GLAMM.²⁸ To test for differences in effects of the secondary outcomes at 18 months, a general linear model was used (except for medication, for which a negative binomial regression model was used). All analyses were adjusted for possible differences in baseline values and background characteristics. Two-sided significance tests were used. Means and standard deviations, adjusted mean differences between the study groups, odds ratios, and incidence rate ratios, including 95% confidence intervals (CIs) and P -values, are presented.

In addition, per-protocol analyses were conducted. For these analyses, it was required that participants had received all visits, adhered to 70% or more of all interventions, and had available data on all primary outcomes. Subgroup analyses on primary outcomes were performed for the following baseline variables: functional status, good versus bad (ADL scores 11–19 and 20–44, respectively); health change, same or better versus worse; living situation, alone versus together; and mastery, average or much versus little.

Ethical approval for the study was obtained from the medical ethical committee of Maastricht University/Academic Hospital Maastricht. Information for patients about the aim of the study, procedures, protection of privacy, and covered insurance (as required by law) was included with the questionnaire. Return of a completed and signed informed consent form (included) was taken as consent to participate.

RESULTS

Participants

Table 1 gives baseline characteristics of the 330 participants. The mean age was 75.7 ± 3.8 . Approximately half of this population had at least one ADL dependency, two IADL dependencies, or both. Nearly half of the population indicated that their health had deteriorated in the 3 months before the screening. Approximately 40% of the participants in both groups received home care, which included home help and personal care, because persons receiving home nursing care had been excluded. The characteristics are comparable for both groups.

The program was largely implemented according to plan. Seventy-eight percent of participants ($n = 124$) completed the entire program of eight visits. In total, 151 participants (95%) received visits, on average seven visits per person with six follow-up telephone calls. In 91% of all visits, one or more problems were treated: on average 10 problems per person with 11 interventions (38% referrals, 45% advice, and 17% information). The overall adherence rate to referrals and advice was 61%. The average time spent on the in-home visits was 65.1 ± 11.8 minutes. The program was feasible, and the participants and nurses appreciated it. More details of the process evaluation are reported elsewhere.²⁹ Primary outcome measures were available for 293 persons: 139 in the intervention group (87%) and 154 in the control group (91%). A flow diagram of the participants is shown in Figure 1.

Outcome Measures

Primary Outcomes

The mortality rates of the groups were not substantially different at the end of the intervention period; 18 intervention participants (11%) and 16 control participants (9%) died. The response rate for the questionnaires at 12, 18, and 24 months was approximately 95%. Only the baseline measurement (0 months) was available for 37 of the 330 participants (21 intervention, 16 control), and they were omitted from the analyses on primary outcome measures. Of the remaining 293 participants, 244 completed all questionnaires, 27 missed one questionnaire, and 22 missed two questionnaires at 12, 18, or 24 months (mainly because of mortality and self-withdrawal). The values of the missing questionnaires were substituted using the valid scores from the nearest time point in the intervention period.

A summary of the results for all primary outcome measures is given in Tables 2 and 3. At the end of the intervention period (18 months), few differences could be detected between the groups. After 12 months, the intervention group had slightly better scores than the control group on self-rated health, functional status (ADL), and health

Table 1. Baseline Characteristics of the Participants

Characteristic	Intervention Group (n = 160)	Control Group (n = 170)
Age, mean \pm standard deviation	75.8 \pm 3.7	75.6 \pm 3.9
Sex, n (%)		
Male	64 (40)	68 (40)
Female	96 (60)	102 (60)
Living situation, n (%)		
Alone	53 (34)	61 (36)
Together	103 (66)	108 (64)
Education, n (%)		
Primary school	60 (39)	65 (39)
Lower to middle professional education	81 (52)	92 (55)
Higher professional education	15 (10)	11 (6)
Self-rated health*, n (%)		
1–4	62 (39)	67 (39)
5	98 (61)	103 (61)
Functional status†, n (%)		
ADL dependencies		
0	73 (46)	81 (48)
1–11	86 (54)	89 (52)
IADL dependencies		
0–1	76 (49)	83 (50)
2–7	79 (51)	82 (50)
Total number of dependencies		
0–2	83 (53)	92 (55)
3–18	75 (47)	76 (45)
Health change in previous 3 months, n (%)		
Same/better	85 (53)	82 (48)
Worse	75 (47)	88 (52)
Health affects social participation, n (%)		
Often	82 (53)	87 (51)
Sometimes	49 (32)	50 (29)
Never	24 (16)	33 (19)
Mastery, n (%)		
Average or much influence on health	59 (37)	79 (46)
Little influence on health	100 (63)	91 (54)
Contacted general practitioner in previous 3 months, n (%)	140 (88)	150 (88)
Contacted specialist in previous 3 months, n (%)	108 (69)	117 (70)
Hospital admission in previous 3 months, n (%)	21 (13)	24 (14)
Use of home care, n (%)	64 (40)	61 (37)

Note: This table (with the exception of Mastery) was earlier published elsewhere.¹⁹

* Indicated by a score on a scale ranging from 1 to 10 points. Participants with poor health status (score < 6) were included.

† Refers to 11 activities of daily living (ADLs) and 7 instrumental activities of daily living (IADLs); dependencies indicate the number of activities for which the older people were dependent on others to perform the activity.

change (RAND-36). None of the differences between the groups reached significance at the 5% level.

Per-protocol analyses were performed for 169 persons (44 intervention and 125 control). Again, no statistical significant differences were found between the study

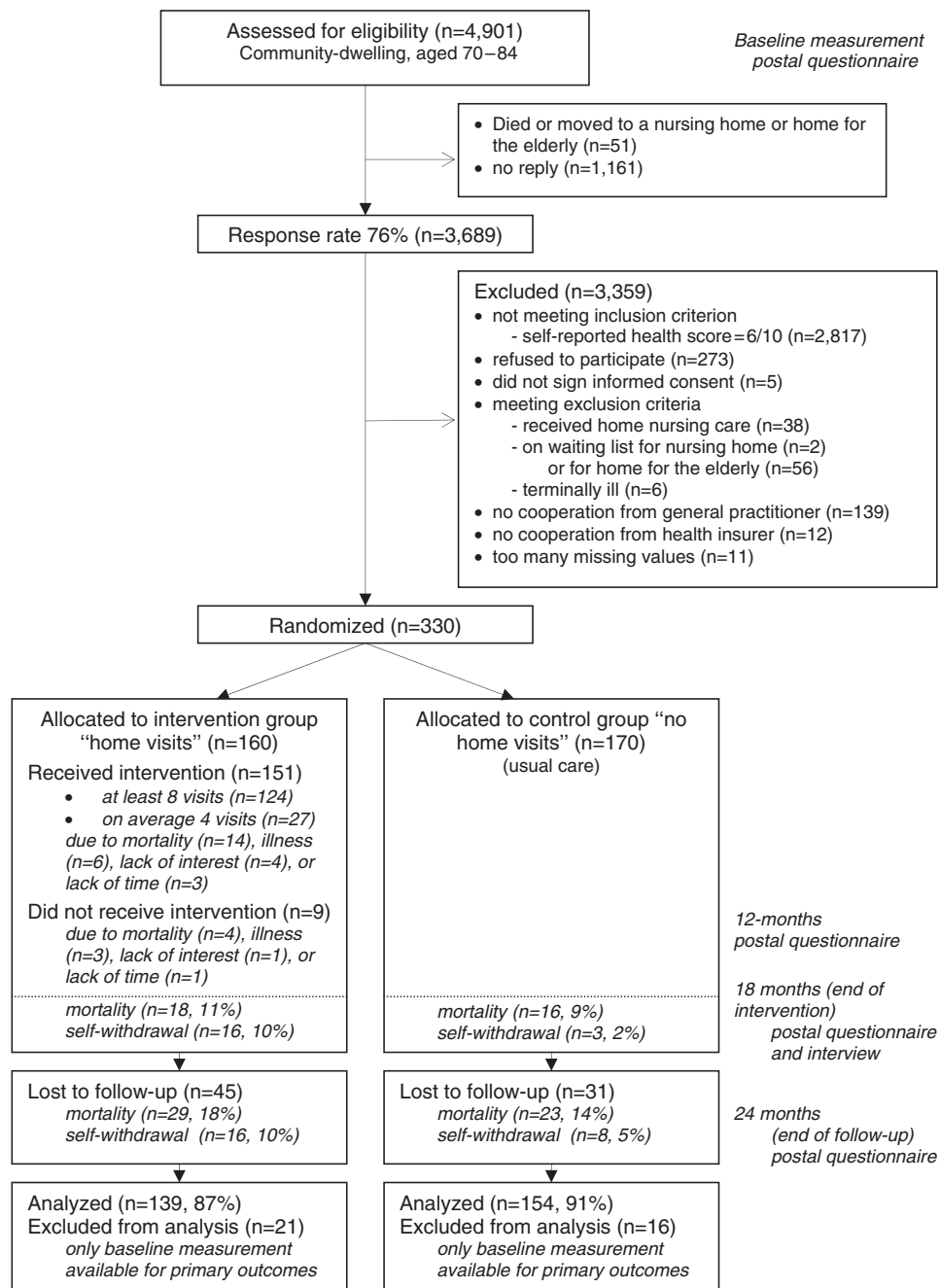


Figure 1. Flow diagram of the participants.

groups. These analyses were based on a small number of participants in the intervention group, because the per-protocol criteria were strictly applied. If a compliance rate of 60% or more was used with all interventions (instead of 70%), the number of included participants in the intervention group increased to 75. This did not change the results.

Secondary Outcomes

Table 4 shows the results of the secondary outcomes, measured based on individual interviews after 18 months. The outcomes were available for 263 persons (128 intervention (80%) and 135 control (79%)). The intervention group scored slightly better than the control group on the health

complaints subscales. No statistically significant differences were found between the two groups for any of the measures.

Subgroup Analyses

At 18 months, the control group scored better than the intervention group on self-rated health in the subgroup "good functional status" (0.49 points, 95% CI = 0.10–0.89) and in the subgroup "same or better health" (0.48 points, 95% CI = 0.08–0.89). No effect was found in favor of any of the intervention subgroups at the end of the intervention period.

Table 2. Effects of Home Visits on Self-Rated Health, Functional Status, and Quality of Life After 12, 18 (End of Intervention), and 24 Months (End of Follow-Up)

Primary Outcome Measure*	Time Point (Months)	Intervention Group (n = 139)	Control Group (n = 154)	Mean Difference (95% CI) [†]	P- Value
		Mean ± Standard Deviation			
Self-rated health score 1–10 [‡]	0	4.4 ± 0.91	4.4 ± 0.89		
	12	5.3 ± 1.49	4.9 ± 1.48	0.33 (– 0.01–0.66)	.06
	18	5.0 ± 1.38	5.2 ± 1.50	– 0.22 (– 0.54–0.10)	.18
	24	5.0 ± 1.51	5.0 ± 1.65	– 0.02 (– 0.38–0.33)	.90
Functional status [‡]					
ADL score 11–44	0	19.4 ± 5.75	19.9 ± 5.77		
	12	19.9 ± 5.96	20.9 ± 6.50	0.79 (– 0.23–1.80)	.13
	18	20.7 ± 6.51	21.0 ± 6.63	– 0.01 (– 1.08–1.05)	.98
	24	21.6 ± 6.87	21.7 ± 6.71	– 0.03 (– 1.16–1.10)	.96
IADL score 7–28	0	16.7 ± 5.69	16.7 ± 5.44		
	12	17.9 ± 5.84	17.9 ± 5.66	0.10 (– 0.83–1.02)	.84
	18	18.6 ± 6.06	18.1 ± 6.05	– 0.36 (– 1.40–0.67)	.49
	24	18.8 ± 6.03	18.8 ± 5.81	0.05 (– 0.97–1.08)	.92
Quality of life [‡]					
Medical Outcomes Study 20-item Short Form Survey mental health score 0–100	0	54 ± 20.3	51 ± 21.4		
	12	55 ± 20.7	53 ± 22.4	– 0.1 (– 4.2–4.0)	.97
	18	55 ± 21.2	52 ± 21.2	– 0.7 (– 5.0–3.6)	.75
	24	56 ± 20.4	51 ± 20.8	2.9 (– 1.1–7.0)	.15

* Underlined score indicates the most favorable score.

[†] Adjusted for baseline value of the variable, age, sex, education, living situation, and mastery. The adjusted values and their confidence intervals (CI) are similar to the unadjusted values (not presented). Positive between-group differences indicate a more-favorable score for the intervention group.

[‡] The number of measured outcomes from the postal questionnaires at 0, 12, 18, or 24 months is nearly the same as the number of participants given per study group (0 or 1 missing value per variable).

DISCUSSION

The home visiting program conducted by home nurses had no effect on the health status of older people in poor health even though the program was performed under near-ideal circumstances. Seventy-eight percent of participants completed the entire program of eight visits. The program seemed to be targeted toward a relevant population of elderly people with health problems; in nearly all visits a broad range of problems came forward. The program was feasible and appreciated by participants and nurses.²⁹ There were no methodological drawbacks. Selection bias does not seem obvious. After stratification and randomization, both groups were comparable. In addition, whether the applied randomization procedure allocating persons who lived together to the same study group influenced outcomes was tested using various statistical methods and was found not to be the case. Also, the response rate of the follow-up measurements was high. Most measurement scales used are internationally accepted instruments. It is unlikely that the small differences in mortality influenced the results.

Several other factors may have affected the effectiveness of the program. First, adherence to the interventions was reasonable (overall adherence rate of 61%) and higher than reported in other home visiting studies (46–49%), but this could still be increased to optimize possible beneficial effects.²⁹ (The nurses may have improved overall adherence rate by reminding and supporting the participants by means of a telephone follow-up contact after each visit.) Also, many referrals were to the GP (39%). Adherence to the

referrals was registered, but adherence of the patients to the GPs' advice was not. Neither was whether applications for services or aids were honored registered. This may have further diluted the effect. Second, a more-intensive program, including, for example, more-frequent visits to support the participants with elements of behavioral change, might have been more beneficial and could have added to the minor effects noticeable at 12 months. Third, although there is still much uncertainty about which specific aspects of interventions are effective, it has been suggested that higher-risk older subjects should be offered programs emphasizing systematic care coordination.³⁰ In the current study a continuous yield of health problems came forward throughout the program regarding social and psychological functioning, circulatory and musculoskeletal problems, and vision and hearing impairments. To manage these problems, many referrals were made to various care providers.²⁹ It is possible that a more systematically planned coordination of care might have been more effective. Fourth, the nurses were not part of a multidisciplinary team. A community care setting, in which resources such as consultations with geriatricians are not readily available, was opted for to conduct the visits. If the program had generated significant beneficial effects, the visits could have been easily implemented in usual care, although multidisciplinary assessment and follow-up may result in more-positive outcomes when targeting specific groups of frail elderly people. Fifth, nurses who were qualified at a lower professional level (home nurses instead of public health nurses) were

Table 3. Effects of Home Visits on Quality of Life and Changes in Self-Reported Problems After 12, 18 (End of Intervention), and 24 Months (End of Follow-Up)

Primary Outcome Measure*	Time Point (Months)	Intervention Group (n = 139)	Control Group (n = 154)	Odds Ratio (95% CI) [†]	P- Value
		Mean ± Standard Deviation			
Quality of life [‡]					
Medical Outcomes Study 20-item Short Form Survey Social functioning score <u>0–100</u>	0	44 ± 27.3	48 ± 26.5		
	12	47 ± 30.3	46 ± 28.0	0.83 (0.43–1.62)	.59
	18	47 ± 29.7	47 ± 29.0	0.75 (0.39–1.44)	.38
	24	44 ± 30.2	43 ± 29.1	0.61 (0.31–1.19)	.15
RAND-36 health change score <u>1–5</u>	0	3.5 ± 0.79	3.6 ± 0.77		
	12	3.7 ± 0.83	3.8 ± 0.91	1.70 (0.87–3.34)	.12
	18	3.7 ± 0.97	3.8 ± 0.83	1.16 (0.59–2.26)	.67
	24	3.9 ± 0.87	4.0 ± 0.83	1.36 (0.69–2.68)	.37
Changes in self-reported problems [§]					
Problem 1 score <u>0–3</u>		(n = 128)	(n = 152)		
	12	2.5 ± 0.66	2.4 ± 0.69	0.68 (0.28–1.70)	.42
	18	2.4 ± 0.72	2.4 ± 0.66	0.88 (0.36–2.16)	.78
	24	2.3 ± 0.76	2.5 ± 0.68	1.71 (0.70–4.16)	.24
Problem 2 score <u>0–3</u>		(n = 100)	(n = 119)		
	12	2.4 ± 0.69	2.3 ± 0.66	0.45 (0.17–1.19)	.11
	18	2.4 ± 0.69	2.3 ± 0.66	0.57 (0.22–1.47)	.24
	24	2.2 ± 0.81	2.3 ± 0.61	1.41 (0.56–3.54)	.47
Problem 3 score <u>0–3</u>		(n = 57)	(n = 70)		
	12	2.3 ± 0.69	2.4 ± 0.63	1.66 (0.41–6.65)	.48
	18	2.2 ± 0.68	2.4 ± 0.62	3.46 (0.88–13.60)	.08
	24	2.3 ± 0.78	2.4 ± 0.67	1.99 (0.50–7.99)	.33

* Underlined score indicates the most favorable score.

[‡] Adjusted for baseline value of the variable, age, sex, education, living situation, and mastery. The adjusted values and their confidence intervals (CIs) are similar to the unadjusted values (not presented).

[‡] The number of measured outcomes from the postal questionnaires at 0, 12, 18, or 24 months is nearly the same as the number of participants given per study group (0 or 1 missing value per variable).

[§] The number of respondents is presented separately per problem, because the number of self-reported problems varied between 0 and 3 per person. Changes are related to the start of the study; 0 = problem is no longer present, 1 = better, 2 = same, and 3 = worse.

used. It is possible that their educational level was insufficient to manage the complex problems of the elderly people. Sixth, the health status of the participants may have been too poor; multiple problems were reported, and medication intake was high (on average 6 prescriptions daily). A possible irreversibility of their functional decline pattern may have been reached. Finally, many participants had already contacted their GP (88%) or medical specialist (70%) in the 3 months before the screening. It is possible that the intervention program did not add enough to the already existing services in the Dutch healthcare system.

The results of this study are compatible with those of the largest meta-analysis of preventive home visits in older people in which the authors conclude that the visits have no effect on mortality, nursing home admissions, or functional status decline.³ Subgroup analyses in this review suggest benefits for certain types of patients or interventions: when programs were based on multidimensional assessment, involved multiple follow-up home visits, and targeted people with lower risk for death. With respect to the last, trials in the meta-analyses with lower annual control group mortality (rates between 3.4% and 5.8%) showed a beneficial effect on functional status, but this effect was not evident for trials

with higher annual control group mortality (rates between 6.1% and 10.7%, based on analyses of tertile ranges). Because the current study targeted people with poor health and who most likely did not have a lower risk for death (the control group annual mortality rate was 6.8%), benefits in this study were therefore not expected according to these subgroup analyses. Another recent, large, home visiting trial targeting an older population with multiple health problems in the United Kingdom also showed no reduction in mortality or benefits for quality of life.¹⁶

Results of two other randomized, controlled trials in the Netherlands investigating the effectiveness of a problem-based community intervention model and a systematic demand-led home visiting program, both targeting frail elderly people, are expected to be published soon.^{31,32} Because their results are not available, it is not possible to synthesize the findings of the three Dutch home visiting studies.

Self-rated health scores were better for the control group than the intervention group in the subgroups “good functional status” and “same or better health at baseline” at the end of the intervention period. This was the only detected difference in the subgroup analyses, and because

Table 4. Effects of Home Visits on Secondary Outcome Measures After 18 Months (End of Intervention)

Secondary Outcome Measure*	Intervention Group (n = 139) Control Group (n = 154)		Mean Difference (95% CI) [†]	P-Value
	Mean ± Standard Deviation			
Health complaints				
SCL-90 somatic complaints score <u>12</u> –60	23.3 ± 7.52	25.2 ± 8.57	1.59 (– 0.37–3.54)	.11
Sleep problems score <u>3</u> –15	7.1 ± 3.75	7.8 ± 3.96	0.64 (– 0.31–1.59)	.19
Depressive complaints (Geriatric Depression Scale score <u>0</u> –15)	4.8 ± 3.05	4.9 ± 3.14	0.08 (– 0.69–0.86)	.83
Cognitive status (Mini-Mental State Examination-12 score <u>0</u> – <u>12</u>)	10.6 ± 1.26	10.8 ± 1.26	– 0.13 (– 0.49–0.22)	.47
Mastery Scale score <u>7</u> – <u>35</u>	21.3 ± 5.25	20.9 ± 5.18	0.50 (– 0.83–1.82)	.46
Social support (Social Support List—Interactions score <u>12</u> – <u>48</u>)	27.8 ± 6.57	28.0 ± 6.73	– 0.05 (– 1.70–1.60)	.95
Loneliness Scale score <u>0</u> –11	3.5 ± 2.98	4.0 ± 3.39	0.44 (– 0.37–1.24)	.29
Number of prescriptions per day	5.9 ± 3.08	5.9 ± 2.95	1.01 [‡] (0.89–1.15)	.88

*The number of measured outcomes from the individual interviews at 18 months is nearly the same as the number of participants given per study group (1–9 missing values per variable). Underlined score indicates the most-favorable score.

[†]Adjusted for age, sex, education, living situation, and mastery. The adjusted values and their confidence intervals (CIs) are similar to the unadjusted values (not presented). Positive between-group differences indicate a more-favorable score for the intervention group.

[‡]This value represents the incidence rate ratio. SCL = Symptom checklist.

there was no apparent relationship with various other aspects of health status, it is likely that this finding occurred merely by chance.

In neither the intention-to-treat nor the per-protocol analyses was any effect found of the home visits on health status. This result may also apply to comparable healthcare settings in other Western countries. A definitive assessment of the merits of the visiting program also depends on the effects on care utilization. The analyses on the use of health services have not yet been completed, but preliminary results on the number of admissions to hospitals, nursing homes, and homes for elderly people also show no differences between the two study groups. This supports the conclusion that the home visiting program is probably not beneficial for elderly people with poor health. The use of all health services will be reported in due time together with a cost-benefit analysis.

There is much heterogeneity in results across the reported home visiting studies. Many factors can play a role in the effectiveness of the interventions, including the target population, characteristics of the intervention (content, number, and period of home visits), the effectiveness of different professionals and volunteers, and adherence to the recommendations. The variation in these factors probably contributes to the heterogeneity in results. Further research is necessary to determine which strategies are most beneficial, including the effectiveness of more-intensive programs, of systematic care coordination and management, and of using higher levels of nursing qualifications. Attention should also be given to the communication between nurses and GPs to successfully implement interventions, because the GP holds an important position within many healthcare systems.

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