An Evaluation Study of an Intervention Program to Promote the Health and Quality of Life of Residents of an Old Age Home through Proper Nutrition and Physical Exercise

Netta Bentur • Yaron King • Svetlana Chekhmir

The study was funded with the assistance of ESHEL – The Association for the Planning and Development of Services for the Aged in Israel.
Executive Summary

Introduction and Study Goals
An experimental intervention program to promote the health of the elderly and improve their quality of life was implemented at the Beit Bayer old age home in Jerusalem between 2003 and 2005. The program, implemented as a cooperative effort between ESHEL and Beit Bayer, focused on two areas: developing and expanding a professional physical exercise program and improving meals, dining room services, and residents' nutritional status. Based on the assumption that sufficient exercise and proper nutrition affect the functioning, health and quality of life of old age home residents, the program aimed to substantially change existing patterns of care in these areas. The program was made possible by a donation from Professor Stanley Mills, a biologist from California, provided through ESHEL – The Association for the Planning and Development of Services for the Aged in Israel.

Beit Bayer is a public old age home belonging to the Idan association. It has 180 beds in five departments: for the semi-independent, for the frail, for the mentally frail, and two nursing care departments. There is also a day-care center attended by approximately 80 elderly people.

The program lasted three years. The first year was devoted to building trust and establishing communication between the staff of the old age home and the staff of the program, and formulating program content, procedures and new work tools. The second year was devoted to full implementation, continued development and adaptation, and the implementation of any changes. The final year was devoted to continued development and to the gradual transfer of responsibility for the program to the staff of the old age home, with the aim of ensuring continuity relative to the experimental period.

This report is the product of an evaluation study. Conducted throughout the three years of experimental implementation, the study addressed both the implementation of the program and its outcomes. During this period, three interim reports were submitted to ESHEL and the implementers of the program at Beit Bayer. The reports reviewed processes and inputs of the program (staffing and equipment), provided feedback, highlighted the program's strengths and weaknesses, and suggested ways of addressing problems so as to improve it. This report summarizes the three interim reports and examines key aspects of the implementation of the program and changes in the status of the residents.

Program Design
Sources of Information and Data-gathering Tools
As the evaluation study was multifaceted, use was made of both quantitative and qualitative research methods. In order to determine the program's outcomes, a prospective "before-and-after" follow-up was conducted (which involved a control group without random allocation that compared Beit Bayer with another old age home, in which the program was not being implemented). Sources of information for the study included face-to-face interviews with
residents and telephone interviews with members of their families; demographic data from
the homes' computerized administrative system and medical data from the residents' medical
records; interviews with senior program and senior old age home staff; analysis of protocols;
participation in departmental and other meetings and committees; and observations.

More specifically, the study included:
1. Face-to-face interviews with some 50 residents in the departments for semi-independent
and frail residents at the old age home participating in the program and some 20 residents
in the department for the frail elderly at the control home (which has no department for
semi-independent residents) using a structured questionnaire, before and after the
program.
2. Telephone interviews with some 80 family members of residents at the home
participating in the program and around 40 family members of residents at the control
home, using a structured questionnaire, before and after the program.
3. Gathering demographic and medical data from the administrative database and the
medical records of all the residents of the home participating in the program and of
residents of the department for the frail elderly at the control home, using a closed
structured form devised especially for the study.
4. Measurements of functional ability in the departments for semi-independent and frail
residents at the home participating in the program and the department for the frail at the
control home.
5. Interviews with approximately 30 members of the senior and mid-level staff who played
an active role in the program, using a semi-structured questionnaire.
6. Participatory observation of senior program staff meetings and staff meetings of the
departments; multiple observations of activities conducted through the program; and
analyses of minutes, documents, and summaries of meetings held in the framework of the
program.

The evaluation of the results of the program included objective measurements, e.g., of the
level of functioning and nutritional status, and subjective measurements, e.g., of the
satisfaction of residents and their families with the home and the changes that were
introduced. Specifically, the main measurements examined in the study were:
1. Nutritional status was examined using information in the medical records regarding two
indices: weight loss and BMI (Body Mass Index).
2. Functional status was measured by a PTT (Physical Performance Test), observation of
mobility, and an interview with the nurse about functioning in ADL using the Barthel
Index.
3. Information about changes in the residents' state of health and use of health services was
culled from their medical records. The main aspects examined were: hospital admissions,
referrals to the emergency room, new bedsores, falls, and fractures.
4. Satisfaction of the residents and their family members with the food, the dining halls and
service, the physical exercise program, and life in the old age home.
Findings
Development of the Program's Infrastructure

- Since implementation of the program involved significant organizational change, dedicated resources – of staff, equipment, and other components of infrastructure – were earmarked for the program. Three staff persons were hired: a program coordinator, a coordinator of the physical exercise program, and a dietician who served as the coordinator of the nutrition program. These individuals became an integral part of the old age home for three years, after which they transferred responsibility for program implementation to Beit Bayer's regular, permanent staff. They acted as "agents of change," and were key actors in the program's creation, development, structuring and design. They played a crucial role in establishing trust and engendering a positive attitude toward the program among Beit Bayer's administration and staff; introduced the program into the home's daily routine; solved problems; and adapted the program to needs and conditions.

- From the very start, an effort was made to involve the entire staff of Beit Bayer, especially senior and mid-level staff, in decision making, in devising a work plan, in task implementation, and in the allocation of responsibility. In addition, many attempts were made to include more staff in committees, so that they would take it upon themselves to become involved in the program and assume roles and responsibility for its implementation.

The Physical Exercise Program

- Exercise classes were gradually implemented in all of the home's departments, in addition to those that already existed. In the departments for semi-independent and frail elderly and at the day care center, the classes increased in number and became significantly more professional. In the department for the mentally frail, a program was begun to encourage residents to walk to preserve their mobility. In the department for nursing care elderly, "seated" activities were implemented for those who were unable to stand.

- One of the most interesting processes took place in the nursing care department. It involved exercise for nursing care elderly who spent most of their time in a wheelchair but who could stand with assistance. To this end, they used an assistive device developed by the Zinman College of Physical Education of the Wingate Institute. At the end of the development period, the implementation of the program was transferred to the home's staff, which included a physical therapist, physical education teachers, caregivers and volunteers. Follow-up revealed that participants' ability to stand increased from 22.07 minutes to 23.06 minutes and that participants improved the strength of their lower extremities and the flexibility of various muscle groups.

- In order to preserve the knowledge gained through the program concerning assistive devices for standing, tools were prepared for the continuous assessment, classification and monitoring of residents' progress, as was a protocol describing the roles of the relevant

1 For this reason, the program was also known as the "Wingate Program."
actors. The classes' success spurred the staff of the nursing care department to meet once a month to adapt activities to the changing needs of the participants, update each other on the status of participants, and discuss new candidates for the class and any problems that arose. The methods used to activate nursing care residents and use the assistive device for standing gained renown both in and outside the old age home.

♦ At the outset, an assessment tool was developed for assessing functioning – the so-called "ESHEL test," which was found to be valid and appropriate; it was used regularly during the program to assess, classify and monitor the residents.

♦ Teachers trained in physical education for the elderly were recruited. Throughout most periods of the program, five such teachers were employed. However, due to various changes and financial constraints, only a few are employed at present. Resources were invested in establishing regular work patterns for the teaching staff. To this end, regular meetings were held at which the teachers discussed the lessons and the findings of ongoing assessments of the residents' functioning, heard lectures, and received in-service training. In addition, new work tools were prepared, and principles established for planning lessons and reporting on implementation. Forms were created for documenting the residents' functioning and changes in their status. Help sheets were created containing exercises of graduated levels of difficulty that were appropriate for varying levels of functioning. In addition, new equipment was purchased, and paths for walking, graded for level of difficulty, were designated inside and outside the old age home. All of these helped to structure the program and prepare for the transfer of responsibility to the staff of the old age home following the experimental period.

♦ Special attention was given to including family members, caregivers and volunteers in the program in order to ensure perseverance without overloading the staff with the task of bringing residents to, and assisting during, classes. Today, there are five volunteers and a volunteers' coordinator. At the same time, family members were given individual instruction and instruction pages in the ways to activate the elderly and help them perform appropriate exercises.

♦ As part of the program, formal and informal activities were implemented to make the staff more aware of the importance to residents of physical exercise, and how they could promote this. These activities included providing them with in-service training and instruction, encouraging them to activate the residents and showing caregivers how to take advantage of the residents' improvement in daily functioning (e.g., in mobility and in transition from bed to chair and vice versa). In addition, extensive effort was made to impart to the head nurses a sense of responsibility for the physical exercise program in their department, as well as showing them ways in which they could increase their involvement in it.

♦ The physical exercise program significantly increased cooperation between the physical education staff and the physical therapy staff, with the latter taking on new areas of
responsibility, including working with groups as well as individuals. Today, both teams classify and monitor residents, and plan and implement new activities.

- At the start of the program, about 60% of the residents of the departments for the semi-independent and frail elderly in both the experiment and the control homes reported participating in physical exercise classes. Two and a half years later, 75% of the residents of Beit Bayer reported this, compared to 54% of the residents of the control group old age home. About two-thirds of the relatives of residents of both old age homes felt that sufficient time was devoted to physical exercise.

The Nutrition Program

Care of the individual

- In an effort to raise the professional level of care of residents at nutritional risk, work procedures were developed to assess the nutritional status of new residents at admission, to treat all residents, particularly those at nutritional risk, and to treat residents who suffered from obesity. To this end, a form was developed for the continuous monitoring of nutritional status, which enabled the staff to identify residents suffering from risk factors. The form was used for all residents of the old age home, including those in the departments for semi-independent and frail elderly whose nutritional status was not previously monitored in any systematic way. Data on residents at risk are updated once a month, while data on all other residents are updated once every six months. In addition, procedures were prepared for intervention, recording, and updating. The dietician and head nurse of each department meet monthly to discuss the status of residents at nutritional risk.

- From the outset, the staff of the departments – particularly the caregivers – were seen as playing a decisive role in improving the residents' food consumption. In order to help them distribute standard portions, colorful posters were prepared that depicted the size of a standard portion of food, as were "food consumption pages" and a protocol of the quantity of food each resident consumed at each meal. Under the supervision of the head nurse, the caregivers were instructed in how to assess food consumption using specially-developed tools, conduct direct observation, and complete the relevant forms.

- A task force was established on feeding and eating, which identified activities to stabilize and even increase the number of residents who could eat independently, developed appropriate methods of feeding, and formulated a training on the topic. Subsequently, nurses, physiotherapists and caregivers underwent in-service training on eating difficulties, using observations to assess food consumption and problems of swallowing. In addition, a speech therapist who is an expert in swallowing disorders among the elderly visited the old age home and consulted with the dietician and other staff on identifying and treating problems of swallowing. However, it appears that this activity was too narrowly focused and too brief in duration, such that no significant change was noted in diagnosing or treating swallowing disorders.
A visit was made to another old age home to learn about an intervention program to prevent constipation. The information gleaned from this visit was then disseminated to the entire nursing staff of Beit Bayer. In addition, a procedure was developed, and an intervention program implemented in the nursing care department, to prevent and treat constipation.

Care at the department level
- Two task forces were established to work on improving the meals served at Beit Bayer, with the participation of staff at all levels and from all departments. One group was engaged in finding aesthetic silverware and dishes to replace the plastic ones that had long been in use. The second group prepared a program to improve the meal serving processes, table arrangements and the attitude of the meal servers toward the residents. Even though these task forces got off to an energetic start and were committed to the processes of change that were planned, their activity gradually lessened, apparently because of the limited authority assigned them. Nevertheless, many changes took place: A vase with a flower in it was placed on every table; colorful tablecloths and napkins were purchased; straw baskets were used to hold bread; water jugs and salt and pepper shakers were bought; paper placemats replaced the use of trays; food distribution began at alternating sides of the dining room; each resident was given a full place setting of silverware; lunch was extended from 30 to 45 minutes; and residents were put to bed only 15 minutes after the end of the meal. In addition, new, aesthetically pleasing and practical dishes replaced the plastic ones.

- In response to the unique needs that arose in each department, departmental nutrition committees were established. These committees proved to be effective because they met regularly to discuss residents at nutritional risk and establish new nutritional intervention programs or monitor existing ones.

- All levels of staff at the old age home participated in in-service training on nutrition and feeding, sanitation and hygiene, the significance of food composition, and the importance of water consumption.

- A consultant on food services and institutional dining halls joined the staff; this made a significant contribution to improving food services at Beit Bayer. He prepared a program that included one-day workshops on serving food and advised department staff in light of the specific needs and problems they raised. The workshops proved very successful and the staff reported learning a great deal. At the same time, they asked for guidance on additional topics.

Kitchen services
The kitchen is, of course, central to food services, and therefore received much attention. A consultant (chef) was hired, who prepared a detailed plan for improving the food at Beit Bayer. He worked intensively at the old age home for three months, and redefined the division of labor in the kitchen, instituted quality assurance of the food wagons sent to the departments, reinforced communication between kitchen and department staff, consolidated
information about the menus, introduced ways to change cooking methods and vary the taste of the food (by introducing additional spices and expanding the ingredients used), and compiled a file of recipes. In addition, new equipment was purchased for the kitchen. Still, ultimately, it was felt that the efforts to upgrade the kitchen through instruction and professional support had been fruitful only in part and there was still a need to continue to enhance the professional level of the kitchen staff. Also note that there was no palpable decline in the complaints from residents and department staff about the quality of the food.

The Attitude of Residents and Their Families toward the Program

Residents and their families were interviewed at the beginning of the program and after two and a half years of implementation, to glean their attitudes toward the food, exercise program and other changes which took place at the old age home. About two-thirds of the residents at Beit Bayer and at the control group old age home were very satisfied or satisfied with the food they received, prior to and after the program. There was an increase in the proportion of residents at both homes who were very satisfied or satisfied with the taste of the food at all three meals. The similar changes at both old age homes may be due to the different, but more limited food improvement program that was implemented at the control group old age home prior to the program at Beit Bayer.

The average score (on a scale of 0-9) that residents gave to instrumental aspects of the dining hall such as noise, cleanliness, crowding, table size, their place at the table, and the dishes increased from 6.24 at the start of the program to 6.6 at its conclusion at Beit Bayer, and from 6.73 to 7.46 at the control group old age home during the same period. The average score (on a scale of 0-6) given the convenience and flexibility of meal times and the attitude of servers toward residents also increased somewhat at both old age homes during the same period.

Most of the families of residents in both old age homes reported being very satisfied or satisfied with the food both before and after the program at Beit Bayer; moreover, no significant difference was noted between the old age homes over time. At Beit Bayer, there was an increase in the proportion of those who were very satisfied or satisfied with the quality of the food, as reflected in its taste, quantity and variety at and between meals – from 76% prior to the program to 86% after it; while at the control group old age home, no change was noted in this area (88% and 86%, respectively). The quantity of food – that is, whether there was enough fruit, vegetables and drinks, or a lack of any of these – appeared to affect overall satisfaction with the food.

Overall, the families of residents of both old age homes were satisfied with the dining hall both before and after the program was implemented at Beit Bayer. However, we would note that a relatively lower percentage of the families of residents of Beit Bayer were satisfied with the comfort of the chairs. Higher percentages of them were satisfied with the table decorations (84% at the start of the program and 95% at its conclusion). No changes in satisfaction with these aspects of food services were noted at the control group old age home during the parallel period.
The vast majority of residents (84%) reported that they enjoyed the physical exercise classes, which "made them feel good" and were "good for their health." The residents also said that they enjoyed the music chosen for the classes. About two-thirds of the families of residents of both old age homes reported that sufficient time was devoted to physical exercise. A few months after the start of the program at Beit Bayer, 77% of family members reported having noticed positive changes in the home's program of physical exercise; however, this proportion declined to 36% within two years.

Several months after program implementation, 62% of the families of residents of Beit Bayer reported having heard about the new program. However, two years later only 50% reported this. Apparently, steps were taken at the beginning of the program to inform the families about it (a letter was sent them from the old age home, meetings were held with groups and individuals, and the residents told their families about the program). However, once the program was underway, not enough attention was paid to informing the families of its progress. It seems that because of the high turnover at the old age home, family members of residents who joined after the program was first implemented were not aware of its existence.

Changes in the Functional Status, Nutrition and Health of Residents of Beit Bayer
In order to assess changes in the situation of residents following the program, we compared their status prior to implementation with their status after it, and we also compared the situation of residents of Beit Bayer with that of residents at the control group old age home. We would note that the turnover in residents at both old age homes produced a very small cohort of residents who were present both before and after the program's implementation; this made it difficult to compare changes in status over time. We therefore also compared all of the residents in each department at both points in time (a comparison between two cross-sectional studies), as well as within the cohort of residents who were still present. However, because of the limited number of residents in each department, we found it difficult to identify the characteristics of residents whose status had changed.

Functional status

- In the course of a two-and-a-half year period, most of the residents who had remained in the departments for semi-independent and frail elderly experienced a decline in functional status in ADL but their mobility remained stable.

- The PPT index, which assesses the actual functioning of residents (such as the ability to pick up a coin from the floor) by means of observation, revealed a small improvement in the functioning of residents who were still at Beit Bayer in the departments for semi-independent and frail elderly.

- There was a small improvement in the functional level and mobility of the elderly who had continued to come to the day care center throughout the period.

Nutritional status
The program's dietician reported a decline in the number of residents of the semi-independent and frail elderly departments at Beit Bayer who were at nutritional risk. For example, 19 semi-independent residents were identified as having a nutritional deficiency in July-August, 2004, compared to seven residents in October, 2005. In the department for frail elderly, 21 versus six residents, respectively, were identified as having a nutritional deficiency during the same period.

The examination of the changes in the residents' nutritional status, which considers BMI and weight loss, found that the proportion of residents at the home where the program was implemented who had lost three or more kilograms in the previous three months remained stable, at approximately 10% with differences by department. The proportion declined, for example, in the departments for semi-independent and frail elderly, but rose in the department for the mentally frail. These findings evidently indicate the important contribution made by having a dietician in the departments for the semi-independent and frail elderly – a position that had not previously been held in those departments. In contrast, at the control home, there was a slight decline in the proportion of those losing weight, chiefly in the nursing department. There was a slight decline in the proportion of those with low BMI (<22) at both old age homes. Note that among residents at both homes who remained throughout the two stages of the study there was almost no change in the proportion of those suffering from weight loss and low BMI.

There was a significant increase among all residents and among the cohort of residents of Beit Bayer who were reported as suffering from constipation. At the control group old age home, in contrast, there was a significant decrease in the proportion of residents with constipation during the same period. The increased proportions of constipation at Beit Bayer are due, at least in part, to greater awareness of the problem and increased identification of those suffering from constipation. The low proportion of constipation sufferers recorded at the start of the program was indicative of a lack of awareness of the problem rather than of the lack of a problem; it was thus not surprising that the proportion of those being treated for constipation had increased by the end of the program.

**Measures of health and quality of life**

The proportion of falls during the previous three months among all residents of Beit Bayer decreased from 19% to 11% (from 21% to 13% among the semi-independent elderly, from 42% to 21% among the frail elderly, and from 6% to 0% among the nursing care elderly). The decline in the proportion of fractures alone was from 2% to 1% among all residents. The proportion of elderly in the cohort who had fallen declined significantly (from 20% to 9%). A decline was also noted in the proportions of falls (from 8% to 6%) and fractures (from 4% to 1%) at the control group old age home. There was no change in the proportion of falls among the cohort of elderly at the control group old age home, although there was a decline in the proportion of fractures (from 3% to 0%).

We also examined dimensions of quality of life, such as reports of pain. More than half of the residents reported suffering from pain, but only infrequently. However, about a quarter of them reported suffering from pain sometimes, often, or always. In addition, a notable
proportion of the residents reported often feeling lonely, although this proportion declined significantly, from 38% at the start of the program to 23% by its conclusion. Given the small number of respondents, it was not possible to learn what factors contributed to loneliness.

Implementation of the Program at the Old Age Home after the Period of Experimentation and Intervention

• The intervention program implemented at Beit Bayer introduced many positive changes in the infrastructure and activities at the home. With regard to the infrastructure, new employees joined the staff; and tools to diagnose and screen residents were developed and introduced, which made it possible to learn about their functional and nutritional status and to monitor changes in their condition and their participation in activities. New methods were also introduced to involve residents in activities, improve nutrition and monitor changes, and tools were purchased to help with this.

• A considerable proportion of the work during the program's third year was devoted to gradually transferring responsibility for its continued operation to the staff of the old age home in a well-planned manner; to defining the roles and powers of the members of staff; and to supervising and training the senior staff so that they would take responsibility for administering the program, assimilating work procedures that had been developed, and putting together and disseminating the knowledge accumulated. The management of the old age home appointed a program steering committee, which defined the boundaries of responsibility of the participants, and a senior staff member was appointed to coordinate the program activities and be responsible for them.

• An element that is crucial to ensuring the continuation of the program is to collate its products and disseminate them to directors and senior staff at other old age homes throughout Israel. For this purpose, a multidisciplinary team headed by ESHEL is designing "courseware for physical exercise and nutrition at old age homes," which will include the products of the experimental program, such as work procedures, protocols, systems, and forms. The courseware will enable users to learn much from the program and to implement some of its components in other old age homes.

Directions for the Assimilation of Components of the Program in Other Old Age Homes

There were positive repercussions over many important elements of the intervention program, which attracted interest from other old age homes in Israel, from the Ministry of Health, and from the Ministry of Social Affairs. There is no doubt that much can be learned from it and considerable parts of it implemented in other old age homes in the country. The evaluation study findings indicate possible directions for action that should be considered in order to extend the program and its components to them.

• Organizational consultants: One issue that came up repeatedly during the development and implementation of the program was whether to seek the help of an external organizational consultant in the planning and implementation of the program and assimilation of the changes. The staff recruited for the program had vast knowledge and training in their
professions – nutrition, physical exercise, and public health – but had no training or experience of planning, implementing, and assimilating organizational change, even though this was one of their main tasks. Consequently they encountered many difficulties in implementing and advancing the professional changes they had initiated. In light of this, it seems worthwhile examining the most desirable options, as well as the desirability of investing resources in professional staff rather than organizational staff with knowledge and experience of initiating, training, guiding, implementing, and assimilating the organizational changes and components.

- Bolstering the involvement of the old age home staff in activities: The processes of implementation have shown that the department staffs, and particularly the head nurses and caregivers have a major role in developing the program, encouraging the residents to participate in it, and in stressing its importance. Therefore, it is necessary to invest efforts and resources to bring the centrality of the program to the head nurses' attention. The program coordinator has an important role here and has to be in close contact with them, organize regular meetings, and continually encourage the involvement of the head nurses and department staffs in the program. It is also necessary to broaden and intensify the involvement of the caregivers and to identify further ways of enhancing their involvement and responsibility.

- Notifying, training, and involving family members in the program: At the start of the program in the old age home, much attention was devoted to notifying members of the residents' families about the program and explaining about it by means of a personal letter and an invitation to come and meet the program staff. Subsequently almost no attention was paid to this and very little action taken to augment their familiarity with and understanding of the processes and the changes that had occurred through the program. Updating, informing, guiding, and giving explanations to family members could evidently enhance their involvement in the care of the elderly, in helping them walk, in afternoon activities, and in volunteering for general activities at the old age home.

- Use of accessible tools to diagnose and monitor the residents' nutritional status: The program has shown that the routine and frequent use of simple tests performed in accordance with the institution's procedures and available to those responsible facilitates easy, ongoing follow-up of the residents' nutritional status. We therefore propose considering that the ongoing nutritional monitoring be based on checking weight loss over a short period and on BMI rather than on complex nutritional measurements that are frequently unavailable at the old age home, are expensive, and make demands on the medical staff, thereby delaying and complicating regular monitoring. An albumin test, and perhaps other biochemical tests, might evidently be worth considering in exceptional circumstances, but only when the two physical indices based on weight measurement are found to be impaired.

- Use of relevant measurements for diagnosis and monitoring: The study findings showed a disparity in the reporting of residents' functional ability when the test was conducted using different tools and different sources of information. This is a known phenomenon, particularly regarding the disparity between the measurement of the elderly person's
functioning based on observation of him/her performing simple activities and the reports given by the nurses, who frequently report a lower level of functioning due to their active involvement in "helping" the person. The research findings showed a certain improvement in the residents' performance ability compared with the stability or decline reported by the nurses. It is therefore worth monitoring their functioning using measurements that examine the actual performance, such as the "ESHEL measurement," which was developed for the program and has been found valid and reliable in the current study. At the same time, it is very important to continue instructing the caregivers about the immense importance of giving the residents the time and opportunity to function on their own, to help them as necessary, and to encourage them, but not to do things for them.

In conclusion, the experimental program implemented at Beit Bayer in Jerusalem to promote the health of the elderly and enhance their quality of life focused on two primary areas: increasing physical activity and improving nutrition and nutritional processes. The program introduced positive changes at the old age home and many of its components have been assimilated into the routine there, according to need and available resources. The program and the evaluation have been presented to a wide audience, including managers of other old age homes, members of ESHEL’s Health Promotion and Institutional Service Committees, and at conferences in Israel and abroad. The program has stirred the interest of many agencies and apparently, much can be learned from this program and it will be possible to implement some of its components in other homes in Israel.
# Table of Contents

1. Introduction and Study Goals .................................................. 1

2. Study Design ............................................................................. 4
   2.1 The Study Population ............................................................ 4
   2.2 Sources of Information and Data-gathering Tools .................. 5
   2.3 The Study Indices ................................................................. 5

3. The Development of the Infrastructure of the Intervention Program and Processes of Its Implementation at the Old Age Home ....................................................... 8
   3.1 Introduction ......................................................................... 8
   3.2 The Program Staff ............................................................... 8
   3.3 Initiating the Program ........................................................... 9

4. The Exercise Program ................................................................. 11
   4.1 The Implementation of the Program in the Departments ......... 11
   4.2 Additional Activities ............................................................ 15
   4.3 Issues for Discussion ............................................................ 18

5. The Nutrition Program ............................................................... 20
   5.1 Introduction ........................................................................ 20
   5.2 Treating the Individual ........................................................ 21
   5.3 Treating the Nutritional Infrastructure .................................. 24
   5.4 Kitchen Services ................................................................. 25
   5.5 Issues for Discussion ............................................................ 26

6. The Attitudes of the Residents' Family Members toward, and Their Involvement in, the Program ............................................................... 28
   6.1 Introduction ........................................................................ 28
   6.2 The Exercise Program .......................................................... 29
   6.3 The Food and the Feeding System ........................................ 30

7. The Attitudes of the Residents toward the Program ................... 37
   7.1 Introduction ........................................................................ 37
   7.2 Attitudes toward the Exercise Program ............................... 40
   7.3 Attitudes toward Food and Nutrition .................................... 41

8. Changes in the Functioning, Nutritional and Health Status of the Residents .............................................................. 46
   8.1 Introduction ........................................................................ 46
   8.2 Changes in Functioning ....................................................... 47
   8.3 Changes in Nutritional Status ................................................. 51
   8.4 Changes in Feeding Abilities ................................................. 57
   8.5 Changes in Health Status ..................................................... 60
9. The Continuation of the Program at Beit Bayer at the End of the Intervention Program 66

10. The Implementation of the Program and the Use of Its Components in Other Old Age Homes 67

Bibliography 71

Appendix A: Demographic Characteristics of the Residents of Beit Bayer and of the Control Old Age Home 74