The well-being supportive environment

ORIGINAL ARTICLE

The physical, social and symbolic environment supporting the well-being of home-dwelling elderly people

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ABSTRACT

Objectives. The purpose of this study was to construct a theory on an environment that would support the well-being of home-dwelling elderly people in northern Finland.

Study design. The study was carried out according to the phases of theory formulation using both qualitative and quantitative methods.

Methods. The data of the first phase consisted of focused interviews (n=39) with home-dwelling elderly people over the age of 65 years. Judgement-based snowball sampling was used. By means of inductive concept synthesis, hypothetical models were constructed of a physical, social and symbolic environment that would support the well-being of the elderly. In order to verify the concepts of the hypothetical model, an instrument was constructed in the second phase of the study and its reliability was evaluated by a panel of experts consisting of nurses (n=15), through expert evaluations (n=3) and by postal questionnaire. The final phase of the study (n=328) also targeted home-dwelling elderly people living in northern Finland. The sampling method used was a stratified random sampling. The data of (n=328) were analysed by principal component analysis (PCA) and confirmatory factor analysis (CFA).

Results. The physical environment that supports the well-being of the elderly includes a northern environment, an environment that enables safe activity and a pleasant physical environment. The social environment that supports well-being enables the elderly to receive help, allows them to keep in contact with family members and friends as providers of support to their well-being and offers a pleasant living community. The symbolic environment that supports well-being consists of the ideal attributes of well-being, spirituality, the normative attribute of well-being and a sense of history.

Conclusions. Even though the environment is artificially divided into separate areas in the theory, in putting the results into practice, it needs to be taken into account that observing separate areas of the environment does not provide a comprehensive view on the connection between environment and well-being.

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Keywords: well-being, home environment, symbolic environment, physical environment, social environment
INTRODUCTION

In the last few decades, there has been a growing interest in the role of the environment as a factor contributing to well-being among the elderly (1). Interaction between individuals and the environment is a two-way process, where individuals’ well-being is affected by factors in the environment, while they also have the capacity to modify different aspects of the environment to make them better suited to their needs (2,3). In this study, the environment and its relation to well-being was investigated with the aid of three aspects: the physical, social and symbolic environment.

The physical environment is defined through physical space and structures, and it is thus the environment of the elderly’s activities (4,5). The structures of the physical environment can be natural, such as natural environment or climate, or man-made, such as houses, streets, shops, services, noise, safety and a pleasant atmosphere. As people get older, their motor coordination and cognitive skills become weaker, and their ability to cope with daily activities in a safe and comfortable manner is compromised (6,7). Long-term illnesses can also restrict the everyday life of the elderly (8). In such cases, a physical environment that enables safe everyday activities becomes essential (9). In previous literature, a physically safe, familiar environment that enables mobility and offers the basic, necessary services close at hand has emerged as key issues when looking at the well-being of the elderly in particular. Weather conditions have also been shown to have an effect on the perception of well-being among the elderly living in the North (10).

The structure of the social environment offers the elderly a chance to get together and interact with other people (4,11,12). It comprises social structures and hierarchy, various social groups, social networks (12) and the cultural environment (11). The connection between social environment and well-being has been investigated in previous studies on both societal and individual levels. On a societal level, key factors affecting well-being are a high standard of living, culture, history, social institutions and a sense of community. On an individual level, the well-being of the elderly can be supported through various free-time activities, a socially secure living environment, social support, close ties with friends and family and by preventing loneliness related to age and the location of one’s dwelling (10).

When looking at the symbolic environment as one of the constituents of environment, there is a comprehensive underlying idea of well-being and living environment (13). Unlike the physical and social environment, the symbolic environment does not have a concrete form; it is only present in the thoughts of the elderly and expressed through the use of language (4,13). The symbolic environment is described through its ideal, normative and institutional attributes. Ideal attributes consist of ideas, values, beliefs and knowledge, while normative attributes refer to written and unwritten rules, laws, expectations and sanctions. The institutional attributes of the symbolic environment comprise roles, organizations, institutions, societies and cultures (4). The attributes of the symbolic environment contributing to well-being are largely based on the qualities of the social and physical environment. Key factors that support well-being include symbolic dimensions contributing to well-being (related to home and one’s immediate surroundings), sense of security, possibility to fulfil spiritual needs and emotions related to the natural environment (10).

The aim of the study was to construct a theory on an environment that supports the well-being of home-dwelling elderly people in northern
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Finland. This article describes the theory in its entirety, using the main concepts of physical, social and symbolic environment. It is important to consider the environment as part of the care of the elderly, as they may be more susceptible than other age groups to changes in and impacts on the environment that affect well-being. This is because the elderly spend much of their time at home, are more dependent on the possibilities offered by the environment to improve their quality of life and may be very emotionally attached to their environment.

MATERIAL AND METHODS

The study attempted to find an answer to the following question: What kind of environment supports the well-being of home-dwelling elderly people in northern Finland? The study was carried out according to the phases of theory formulation (14), using both qualitative and quantitative methods. The progress of the theory-forming process is described below as follows: 1. Different aspects of an environment supporting the well-being of home-dwelling elderly people, over the age of 65 years and living in northern Finland (physical, social and symbolic environment), were described, and, through the use of concept synthesis, hypothetical models of the physical, social and symbolic environment supporting well-being were constructed; 2. A scale was developed to test the models; and 3. The hypothetical models were tested.

Phase 1

The material and methods used in the study are presented in Table I. The analysed data of the first phase consisted of focused interviews (n=39) with home-dwelling elderly people over the age of 65 years. The informants were people aged 65–89 years (mean age 76 years) from northern Finland. The study series consisted of 13 men and 26 women. Judgement-based snowball sampling was used, that is, each informant was asked to name other possible interviewees in their immediate environment. By means of snowball sampling, the researcher was able to move from one informant to another, following up each introduction to yet another person (15). At first, at least one informant was found in each study locality, who then helped to find others. The key informants were identified by persons residing in the study localities, who, either as professionals

| Phase | Material | Methods of analysis |
|-------|----------|---------------------|
| Phase 1 | Description of the physical, social and symbolic environment of home-dwelling elderly people over the age of 65 years in northern Finland, and construction of mythical models. | Interviews n=39 | Inductive concept synthesis |
| Phase 2 | Construction of an indicator to test the hypothetical models. | Panel evaluation n=15 | Correlation coefficients |
| | | Expert evaluations n=3 | Preliminary principal component analysis |
| | | Postal questionnaire n=96 | Cronbach’s alpha |
| Phase 3 | Testing the structures of and relations between the concepts of the hypothetical models of an environment contributing to the well-being of home-dwelling elderly people in northern Finland. | Postal questionnaire n=328 | Principal component analysis and confirmatory factor analysis |
or private persons, asked the prospective informants for permission to give their contact information to the researcher. There were no refusals and all who were asked agreed to participate. The recruiting process and completion of the interviews took six months. The number of interviews was based on theoretical data saturation.

The general interview themes were outlined based on Kim’s definition of the physical, social and symbolic environment (4). Each interview proceeded with descriptions of dwelling histories and current living environments used as introductory topics. This was followed by the interviewees describing in their own words the elements of an environment that promotes well-being. If necessary, the interviewer asked for specifications within focused themes. The average duration of an interview at the interviewee’s own home was an hour (between 30 and 90 minutes).

By means of inductive concept synthesis, hypothetical models were constructed of a physical, social and symbolic environment supporting the well-being of the home-dwelling elderly in northern Finland. In order to form concepts, synonymous statements were merged to form subconcepts, and these were given names that described them well (16,17). The subconcepts were further merged to form concepts, and the concepts merged to form main concepts and possibly connective concepts as well (18). As a

Figure 1. An example from a hypothetical model (sub-, form and main concepts).
result, concepts with related contents for hypothetical models were achieved according to the principles of inductive theory formation. For example, the main concepts of the physical environment were safe mobility, a safe home and a familiar neighbourhood. Based on these, the contents of safe mobility are defined through the maintenance of traffic routes, lighting, mobility aids, resting possibilities and threats posed by the northern environment. An example of the hypothetical model is shown in Figure 1.

**Phase 2**

When a new concept has been named, it has to be empirically verified and then modified, if necessary. This requires the empirical indicators of the concept to be named (19). In this study, the empirical indicators are statements formed based on the contents of the concepts of the hypothetical models (i.e., getting help from children supports living at home). In order to verify the concepts of the hypothetical model, a 5-step Likert-scale indicator (5 fully agree – 1 fully disagree) was constructed in the second phase of the study and its reliability was evaluated. The indicator, designed to test the hypothetical models, consisted of 105 total statements on the physical (36 statements), social (32 statements) and symbolic (37 statements) environment that supports the well-being of the elderly.

First, the validity of the contents of the indicator designed to test the hypothetical models was evaluated by a panel of experts consisting of nurses (n=15) and through expert evaluations (n=3). The expert panel was based on a purposive sample. Experts were required to have both nursing practice and nursing science experience. In observing the validity of the contents, experts investigated compliance with the theory of the concepts used in the indicator as well as the correctness of the operationalization of the indicator. The panel and expert evaluations were also used in an attempt to recognize statements in the indicator that could possibly be misunderstood or that were poorly formulated and then correct them, for example, by using more detailed instructions (20).

In addition, the indicator was pretested by collecting postal questionnaire data (n=96) from home-dwelling elderly people over the age of 65 years living in northern Finland. The questionnaire form included questions about answering the statements in order to further improve the indicator. The structure of the indicator was first studied with the aid of correlation coefficients, followed by a preliminary principal component analysis of the data. No statements were omitted due to low (>0.30) correlation coefficients, but 2 statements from the section on physical environment and 3 statements from the section on social environment were deleted because of low principal component loadings (>0.35). The alpha values for the sections were 0.82–0.65. Based on the results of the pretesting, the indicator could be considered successful in regard to answering the statements, as the majority of the respondents considered answering to be easy, the statements to be understandable and the length of the form to be suitable. The response rate was 64%. The final questionnaire form consisted of 100 statements, with 34 statements on the physical, 31 statements on the social and 35 statements on the symbolic environment.

**Phase 3**

The material of the final phase of the study (n=328) also consisted of home-dwelling elderly people living in northern Finland. The sampling method used was stratified random sampling, and the sampling was randomized to 250 female and
250 male respondents between 65 and 74 years of age. The number of all people aged 65–74 in Finland at that time was 29,104. The background information (subjective health status, gender distribution and demographical information) was compared to Statistics Finland data sources and, based on that information, the results can be generalized relatively well to other populations.

The response rate was 67%. In order to test the hypothetical models, principal component analysis and confirmatory factor analysis were performed. Principal component analysis is used to search for an explanatory model from combinations of statements, while confirmatory factor analysis looks at the final model and determines whether the data support the model that has been developed. These forms of factor analysis can be used as tools in indicator and theory development. In theory formulation, factor analysis can be used to describe and explain connections between concepts and to name and recognize structures of the theory (21).

Principal component analysis was performed using rectangular varimax (variance maximized) rotation. The statements with factor loading >0.40 were included in the components. In literature, factor loadings recommended to be included in the analysis vary between 0.35 and 0.55 (21). Principal components included the statements with eigenvalue of >1. The goodness-of-fit of individual statements loaded on the principal component was observed through the use of communalities, which had to be >0.30. Based on low communalities, it was possible to delete statements that did not fulfil the requirement of “goodness.”

Following the principal component analysis, a confirmatory factor analysis was performed in order to determine whether the data supported the models developed through principal component analysis. Confirmatory factor analysis enabled the modification of hypothetical models using indices of relevance to the data (21). The models of different aspects of the environment were outlined using Amos™ 6.0 software. As performing confirmatory factor analysis requires an identifying model, 1 statement was designated as number 1 and the rest as 0 to each factor. After this, the models were ready to be tested. The fit of the models was investigated using the following parameters: GFI, AGFI, RMR, NFI, CFI, RMSEA, and $\chi^2$. As the models had to be modified in

| Table II. The results of confirmatory factor analysis of the main concepts as indices of goodness-of-fit to the data. |
| --- |
| Model | GFI* | AGFI* | RMR** | NFI* | CFI* | RMSEA*** |
| Physical environment: | | | | | | |
| Northern environment, four-factor model | .98 | .95 | .05 | .97 | .99 | .05 |
| Environment enabling safe activity, three-factor model | .99 | .99 | .04 | .99 | 1 | <.00 |
| Pleasant physical environment, four-factor model | .97 | .95 | .02 | .95 | .98 | .05 |
| Social environment: | | | | | | |
| Keeping in touch with family, two-factor model | .99 | .97 | .01 | .99 | 1 | .04 |
| Friends as contributors to well-being, two-factor model | .99 | .94 | .02 | .99 | .99 | .08 |
| Getting help, two-factor model | .97 | .93 | .07 | .94 | .96 | .07 |
| Comfortableness of the living community, three-factor model | .98 | .96 | .03 | .97 | .99 | .04 |
| Symbolic environment: | | | | | | |
| Ideal properties of well-being, three-factor model | .99 | .96 | .05 | .97 | .99 | .04 |
| Spirituality, two-factor model | .99 | .97 | .01 | .99 | 1 | .04 |
| Normative properties of well-being, three-factor model | .98 | .94 | .04 | .97 | .99 | .05 |
| Sense of history, two-factor model | 1 | .98 | .01 | .99 | 1 | .02 |

*GFI, AGFI, NFI, CFI: to be at least .90.
**RMR should be under .05.
***RMSEA should be under .06.
order to achieve the best possible statistics, CAIC (Consistent Akaike’s Information Criterion) values were used for comparing the models. Even though empirical statistics are significant in developing a theory and modifying models, the researcher’s background knowledge and view on the contents of the theory are of at least equal importance (22). Accordingly, when making decisions, their significance on the contents of the theory was always a primary consideration.

After confirmatory factor analysis, the factors, that is, the main components, were named. They can be named according to the statement or statements with the highest loading, and according to the processes contributing to the formulation of the factors. From the point of view of theory development, however, basing the names on theoretical premises is a good alternative. In this study, naming was based on the results of the first phase, during which theoretical concepts were formed. The indices of goodness-of-fit of the main concepts that were formed using the factors of each environment subcategory are presented in Table II.

RESULTS

The following is a description of the theory on an environment that would support the well-being of elderly people living in northern Finland. It was developed based on the material and methods described above. The main concepts regarding a physical environment that supports the well-being of the elderly include a northern environment, an environment that enables safe activity and a pleasant physical environment. Several factors associated with a northern environment, such as climate and availability of services, are related to the well-being of the elderly. For example, various cold- or heat-related symptoms during the winter or summer make the elderly’s everyday coping more difficult and weaken the perceived state of their health. In the winter, snow, ice and cold pose their own challenges to outdoor mobility. Depression is also more common in the winter than in the summer. Social interaction between elderly people that takes place out of doors is also restricted by darkness and poor weather conditions.

An environment that enables safe activity comprises both safety at home and immediate surroundings that enable safe mobility. At home, important aspects include ensuring the safety of stairs and steps, reducing the need to reach or climb, using various support rails, and making floors and the bathroom less slippery. In the immediate surroundings of the home, ensuring safe mobility calls for well-maintained traffic routes and the use of technical aids.

In theory, a pleasant physical environment consists of tidiness at home and in its immediate surroundings, closeness to the natural environment and opportunities for various activities. Natural environments, such as parks and gardens,
are popular meeting places that provide an opportunity to interact with other people. They are also popular among the elderly for exercise and relaxation. A pleasant living environment also includes possibilities to engage in various activities.

Social environment that supports well-being
In theory, a social environment that supports well-being consists of getting help, keeping in touch with family members, having one’s well-being supported by friends and enjoying a pleasant living community. Among the forms of social support, the practical and knowledge-based support for the elderly is manifested in concrete form in getting help. Getting help as a form of support for living at home consists of concrete help and peer support received at home. It is often a natural part of social interaction, and this help is mainly received from relatives, friends and home care services. Peer support is made possible by a shared religious faith or between people who have the same illness, for example.

Keeping in touch with family members makes the elderly feel cared about; this gives them pleasure and contributes to a feeling of safety. However, the feeling of being cared about does not always require immediate contact: keeping in touch by phone may be enough. Children and grandchildren have a significant role in difficult life situations, such as dealing with the loss of a spouse. In addition, the emotional experience associated with being a grandparent may contribute to mental well-being among the elderly.

In addition to family members, close, long-term friendships maintain the feeling of well-being among the elderly by enabling social interaction. The significance of friends as supporters of well-being is also related to the feeling of being cared about, as in the case of keeping in touch with family. Additionally, friends can support the elderly by bringing joy to their everyday lives, by providing support in difficult life situations and by providing an opportunity to get away from daily routines through conversation.

A pleasant living community consists of the friendliness of the people living in the community, good relations with neighbours and possibilities for social interaction and various activities. The friendliness of people around them and the ability to live among people they know adds to the living comfort of the elderly, particularly women. Good relations between neighbours and agreements to take care of each other, which are common among elderly neighbours, also contribute towards a sense of safety. Opportunities for various hobbies and activities close by are a significant factor of well-being among the elderly. Engaging in meaningful activities at home, gardening and various other hobbies help them to keep in good spirits.

Symbolic environment that supports well-being
A symbolic environment that supports well-being consists of the ideal attributes of well-being, spirituality, the normative attribute of well-being and a sense of history and continuity. The safety of the living community, fear related to the dwelling and a detachment from everyday routines describe the ideal attributes of well-being among the elderly. Living at home contributes to the feeling of safety as such, as the home is considered to be a safe place both physically and symbolically. Feeling safe is one of the attributes of the symbolic environment, which is closely linked to a sense of community in an area. Perception of the living community as a safe place is related to familiar people and helpful neighbours. Threats to the ideal attributes of well-being include various fears stemming from the environment, such as going out alone at night or being tricked by door-
to-door salesmen. The symbolic environment is closely connected to the two other aspects of environment. Therefore, the factors contributing to well-being in terms of social or physical environment may also have symbolic dimensions. One of these is the possibility for various activities provided by the social environment, as the elderly people in this study believed that hobbies and meaningful activities helped them to maintain their health by enabling them to get away from everyday routines. In this theory, detachment from everyday routines is used to signify refreshing the mind, forgetting about worries and experiencing happiness.

On an individual level, perception of spirituality is a key factor contributing to well-being among the elderly. Religious faith, prayer and taking part in church activities give the elderly strength that helps them cope. In addition, there are spiritual elements associated with natural environments, such as forests, because of their reviving, refreshing qualities and the sense of freedom, happiness and harmony that they offer.

The normative attributes of well-being of the elderly include the sense of freedom related to home and living surroundings, a sense of privacy and factors that restrict life. The sense of freedom consists of various physical properties, such as the home, garden and natural environment. It is used to describe the freedom to act in the manner of one's choice. The sense of freedom is also connected to being liberated from social pressure and the freedom to be oneself. In this theory, privacy is used to signify peace and quiet, as well as the privacy made possible by residing in one's own individual space, that is, one's home. Factors restricting life include having an illness or having a spouse suffering from an illness and the treatment related to this, as well as environmental limitations constructed as mental images. Limitations related to illness are defined as reduced mobility and restrictions resulting from the treatment of the illness, which pose limitations to life, activities and social interaction. After falling ill, the elderly may also restrict their own social interaction. A feeling of shame due to alterations in appearance or loss of hearing caused by illness was a factor that could lead to reduced social interaction. In addition, the weakened health of a spouse may keep the elderly at home and reduce their interaction with other people.

A sense of history has a very strong presence in the experiences the elderly have of their environment. It permeates nearly all aspects of the environment presented above. Concrete examples of attributes expressing a sense of history include memories and dwelling history. These contribute to mental well-being, as pleasant memories provide comfort in difficult times and keepsakes around the house contribute to a sense of dwelling comfort. In addition, dwelling history, comprising long-term dwelling in the same house and in the same area, contributes to one's level of attachment to the living surroundings. Living in the same house for a long time also increases a sense of freedom as experienced by the elderly.

**DISCUSSION**

The reliability of the theory was assessed based on the results of expert panels, expert evaluations (validity of content) and factor analysis (validity of structure), as well as by calculating Cronbach's alpha value of each concept. The confirmatory factor analysis showed that the validity and reliability of the theory was relatively good. The statistical values as well as the indices of relevance to the data presented as a result of the analysis are sufficient in all the models tested (Table II).
Of the attributes of the physical environment, natural environment is the one that is most multidimensionally linked to the well-being of the elderly. Parks, nature, gardens and other green areas are seen as meaningful places for exercise in terms of maintaining physical health. The same sites encourage the elderly to meet with each other. Social well-being can thus be supported by paying attention to the natural features of the living environment. Nature is also associated with properties contributing to the mental well-being of the elderly. Moving around and spending time in a natural environment has been found to have a positive impact on mood (23,24).

In the theory, one of the normative attributes of symbolic environment was the experience of limitations caused by illness. The most common factors restricting participation in hobbies and other activities, which have been observed in other studies as well, are weakened health, lack of possibilities for hobbies and other activities in the vicinity and, less often, the illness of a family member and the need to take care of them. The sense of limitation as part of the theory supports Lawton’s view that properties of the physical environment may help maintain the perception of being “feeble.” The sense of limitation caused by illness can be reduced by modifying the social and physical environment of the elderly so that it supports their functional capacity (25). According to the results of this study, the limiting effects of illness can primarily be influenced by focusing on technical aids and home help. A more versatile use of gerontechnology in the homes of the elderly helps them make use of the functional capacity they have left and decreases their sense of limitation.

The starting point of this study was having the elderly define the attributes of an environment that supports well-being during the interviews. Therefore, it is constructed specifically from the point of view of the elderly, and may be complemented by other points of view in the future. Several earlier studies have shown that the elderly want to continue living at home as long as possible. However, grown-up children would sometimes like their elderly parents to move closer to them or into assisted living. The study of Ala-Nikkola also states that family members and the clients of home care may sometimes disagree on how to solve problems related to home-dwelling, institutions or nursing homes. Family members may express demands that the elderly person does not agree with (26). It is hoped that the results of this study will help nursing staff and family members understand why the elderly often wish to continue living at home instead of another place of residence, even at the risk of loneliness. It appears that the elderly are quite attached to various aspects of their environment on an emotional level; the duration of their dwelling in a particular place emerges as a factor describing constancy. As a result of long-term dwelling, the living surroundings have become familiar and there is a strong sense of attachment. Moving to another place may cause a sense of rootlessness as well as changes in social interaction.

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