Preparing the transition into long-term care institutions: a cluster analysis of the representations of the place of residence in European elders

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Abstract
Background: The risk of entry into a nursing home has been shown to vary according to geographical and clinical factors, although the effect of location could be due to confounders. The main objective of our study was to describe their perception of their place of residence in adults aged over 65 in four European countries.

Methods: The cross-sectional survey was carried out in February 2016 by a poll institute in a representative sample of individuals from a population of retired residents in four European countries, selected by quota sampling. A total of 4160 subjects aged 65 or older were selected. For descriptive analysis, qualitative variables were presented with absolute frequencies and percentages. A Principal Components Analysis was performed, and clusters were identified using results from the analysis.

Results: The study population comprised 4160 individuals from Germany, Belgium, France and Italy. Overall, 2389 (57%) were women; 1414 (34%) were aged 65 to 69, and 2709 (65%) were living maritally. A majority (2938, 70%) were home owners, while 1253 (30%) showed signs of social precariousness including low income, and 1159 (27%) had a low level of education. Principal component analysis identified six well-defined groups: Wealthy Belgians, Flexible single people, Wealthy Germans, Low-income Germans, Isolated Italians, Italian homebirds.

Conclusion: Understanding the representations that elderly Europeans have of their place of residence can help healthcare professionals decide how to assist each elder towards an acceptance of his/her new life in the nursing home.

Introduction
An estimated 728,000 persons live in the various residential care structures available for the elderly in France. The risk of entry into a nursing home has been shown to vary according to geographical and clinical factors (1,2), although the effect of location could be due to confounders (3). A study realised in Florida suggests that the elderly from less populated, non-urban areas have a higher likelihood of being admitted to a nursing home (4). Entry into a nursing home is associated with a state of frailty, and a decrease in the social environment’s ability to provide direct support (5–12), meaning life at home is no longer possible. The problem of caregiver burden is likely to increase in
the years to come. The growing number of divorces, a decrease in natality (13) and a higher life expectancy are leading to a reduction in household size, which in turn reduces the potential number of caregivers (14,15). These changes call for a re-evaluation of the current health policy regarding the elderly (16). There is no consensual definition of what “home” is. The concept of “home” covers physical and cognitive entities and is specific to each individual. The place where life is lived, one’s “home” can extend beyond the walls of the house and include relations with loved ones and daily interactions. Indeed, it represents a mental space that is specific to each individual and built as a result of the events they experience in their life. It could be considered as the last outpost in which an individual takes refuge. Often, the decision to enter a nursing home is a default choice, because the person is no longer capable of living independently at home despite assistance. Nursing home entry is sometimes (17) not anticipated by the person, and often decided by their children and/or spouse. As cognitive impairment predicts entry in the nursing home (18–20), cognitively impaired patients sometimes do not expect such a transition and can easily be disoriented in the process. Behavioural problems were also linked to institutionalization (21). Nonetheless, caregivers are also often distressed when the patient enters long-term care, and as cognitive decline is frequent afterwards, they may be inclined to question their decision (22).

Thus, entering a nursing home can represent considerable mental trauma in addition to an increased financial strain (23). Moreover, this can happen in a context when the patient is experiencing depressive symptoms (24), which could make him less resilient. The older person transitions from a situation where they were in control, to a situation where they are a spectator, and everything is decided for them by others. Sometimes, short stays can precede long-term entry into a nursing home which could make the transition easier (25). A number of older people legitimately raise the question of the status of their private sphere, and the bridge between the individual and the collective.

Caregivers can maintain continuity for the elder by visiting often. Frequent visits are associated with being a spouse, education, a strong sentiment against placement, proximity to the facility, a close past relationship before institutionalization (26).

An improved understanding among professionals of the psychological issues at play could help to
facilitate a more empathic attitude and contribute to more harmonious development of a life project for nursing home residents. Although the definition of what constitutes successful aging is highly debated (27–30), satisfaction with the place of residence can also be studied using the theoretical frameworks of successful aging. For example, the Baltes model of Selection, Optimization and Compensation (SOC) could help us understand how new nursing home residents can reframe their perception of their place of residence and adopt new habits. Therefore, the main objective of our study was to describe the perception of their residence in adults aged 65 years or older of four European countries. The secondary objective was to describe a model of representation for the elderly in each country, in order to better apprehend the characteristics specific to each participating nation.

Materials And Methods

Study population

The survey was carried out in February 2016 by a poll institute in a representative sample of individuals from the population of retired persons in four European countries, selected using quota sampling. A total of 4160 subjects aged 65 years or older were selected. This cross-sectional study was carried out using an internet questionnaire sent to the selected individuals in France (n = 1000), Belgium (n = 1076), Italy (n = 1081) and Germany (n = 1003). The survey was based on quota sampling to achieve a sample representative of the general population. The reference population selected was diverse in terms of age, including both recently retired persons as well as oldest-old individuals. The characteristics used for the quota sampling method were sex, age, socio-professional category, region, city size, number of persons in the household, autonomy (dependent/independent), marital status, place of residence, income and highest educational qualification. The quotas were defined based on the socio-demographic structure of the population. The aims of the survey were also to obtain useful information about the different subgroups of the population (according to age, sex, income etc.).

The Ipsos© Access Panel

The questionnaires were administered via the Access Panel online service belonging to Ipsos Interactive Services©: The Access Panel is a pool of households and individuals spread
homogeneously across the whole country and who regularly accept to participate in market research studies. The panel comprises over 600,000 individuals on whom detailed information has been collected in addition to the data used to establish the quotas (e.g. the size of the household, income, level of education, number of children etc.). This methodology guarantees adequate representativeness for almost all quotas (i.e. sex, age, socio-professional category, city size and region). Numerous quality controls were carried out at all stages of the survey. Data can be accessed to corresponding authors.

Quality control procedures
Quality control procedures were implemented at each stage of data collection and all the online sessions were performed using the CONFIRMIT software. This system enables automatic management of how the questionnaire scrolls (guides, filters), eliminates coding errors (e.g. the system does not allow two answers to be given for a question where only one answer is required), displays questions or sub-questions in random order to avoid bias linked to the order of appearance of the items on the questionnaire, controls coherence between responses, and ensures automated control of quotas in real time. This software meets ISO 9001 certification standards (2008 version).

Development of the questionnaire
The questionnaire was developed jointly by the Korian Foundation for Ageing Well, by IPSOS ©, and by a sociologist. The questionnaires contains 25 question units. The topics addressed include concepts related to attachment to the home environment. A number of sociodemographic characteristics were also recorded (age, sex, household, income, marital status, level of education).

Statistical analysis
For descriptive analysis, qualitative variables were presented as absolute frequencies with percentages. Questionnaire results were analysed using a Principal Components Analysis (PCA).

Clusters of residents were identified with the PCA.

Results
The study population comprised 4160 individuals from Germany, Belgium, France, and Italy. The characteristics of the study population are described in Table 1. Overall, 2389 (57%) were women; 1414 (34%) were aged 65 to 69, and 2709 (65%) were living maritally. A majority (2938, 70%) were
home owners, while 1253 (30%) showed signs of social precariousness including low income, and 1159 (27%) had a low level of education.

A Principal Components Analysis was performed based on questions 1, 7, 8, 10, 14, 19, 34, 36 as active variables, while socio-demographic variables and questions 1, 3, 7, 8, 10, 11, 14, 19, 21, 24, 25, 33, 34, 35, 36, 37, 38 were used as illustrative variables. The Principal Components Analysis identified six well-defined groups whose main characteristics are described below and in Table 2:

Group 1 (N = 994; 23%): Mainly Belgian, well-off males with a high level of education. They are fond of their lodgings, furniture and personal belongings. They enjoy life and are confident in the future. This first group mainly prefers to stay at home, adapting their residence to meet their evolving needs rather than sharing accommodation with others.

Group 2 (N = 786; 19%): Belgians and Germans, single, flexible and young. Their satisfaction with, and fondness for their residence are of lesser magnitude than in Group 1. They are willing to move to accommodation that is more suitable for their physical capacity. This group is also characterised by loneliness, and less contact with those around them. This prompts some people to start a new life, seek to please, and engage in romantic relationships. They are less confident in the future due to a more pronounced anticipation of future dependency.

Group 3 (N = 1014, 24%): Mainly German and well-off, with well-developed social fabric, living maritally and able to rely on their children. They are happy and satisfied, both physically and mentally. They feel younger than their age. They are independent and life is a pleasure to them. As in Group 1, they are fond of their home, their furniture and their habits. This explains their preference to adapt their current accommodation to their changing needs rather than moving house.

Group 4 (N = 187, 5%): Mainly German with low income, young, and fragile in both social and human terms, these elderly people cannot rely on their spouse. They are not fulfilled, either mentally or physically. Life is a source of pleasure for only 65% of this group, compared to 78% on average. In this group, income was lower than average. They were often in rented accommodation, and less attached to their residence and their habits. Consequently, they were willing to change accommodation if it will mean better living conditions, and 50% of them would envision living in a
nursing home.

Group 5 (N = 470, 25%): Of Italian origin, socially isolated, female, elderly. They have limited financial resources and a low level of education. They suffer from social precariousness, with few friends on whom they can count, and also physical problems that render them dependent (48%). The majority of those in this group do not consider life to be a source of pleasure, and they have less confidence in the future. They would be willing to move house and region for an accommodation that is more suited to their physical state, because they feel little attachment to their furniture, personal belongings and daily habits.

Group 6 (N = 709, 17%): Mainly Italian, mainly fond of their residence, predominantly women (72%). This group presents some similarities with Group 5, in that they are dependent and isolated. The elderly in this group do not feel physically and mentally fulfilled. They cannot save money due to their relatively low income. Only 38% of them feel confident in the future. Contrarily to the isolated Italians in Group 5, those in Group 6 are very attached to their habits, their furniture and their home, and consequently, are not willing to move.

The profiles of French respondents were neutral, and did not belong to any of the six well-distinguished groups identified above.

The profiles of European elders are presented in Figure 1.

Discussion

We show that there are different typologies regarding the perception of one’s home according to geographic location. Indeed, the profile of young, recently-retired elders, living maritally, independent and fond of their routine, is more pronounced among the Belgian and Germany respondents. These groups prefer to adapt their accommodation to their changing needs rather than live in a nursing home. This finding is in line with a report showing that people with high cultural capital, and usually also high economic capital, with solid and active family networks, try to control their ageing in an adapted environment. German respondents who had a more precarious social situation than their wealthier counterparts, had fewer social links, and their attachment to material belongings and their accommodation was low. They show a tendency to move house or live in a nursing home if it means
that the living conditions are better. Moving into a nursing home can be a strategy to combat loneliness (31).

The Italians are represented by two socially insecure profiles: the first comprises mainly socially-oriented individuals who are very fond of their home. Despite difficult living conditions, they prefer to remain at home rather than to live in a nursing home. The second profile comprised essentially isolated individuals with few social contacts. For these individuals entry into a nursing home can be a solution to achieve a better quality of life. Finally, the French are represented by balanced profiles that are not dominated by any one group or class of individuals.

Our results are coherent with previous data published in the literature. Social isolation and loneliness can lead physically able-bodied elderly persons to seek out collective living arrangements, such as assisted living. Our study also reveals geographical specificities, which may be at least partially explained by different policies regarding care of elders in society between countries in the North versus the South of Europe. In southern European countries such as Italy, the fate of incapacitated elderly people depends on the family rather than on institutional solidarity, in contrast with northern countries like Germany or Belgium. These findings can be interpreted as evidence that culture and socio-economic factors can influence the elders’ perception of their place of residence, which could result in different emotional responses when a change of place of residence is needed. More research is needed, however, to ascertain if the identified profiles can predict adverse outcomes surrounding the transfer to a nursing home.

Our findings also show that living maritally, which was more frequent among Belgian and German elders, contributed to a happier and more fulfilling life both mentally and physically. These results are coherent with previous reports that couples are better equipped to deal with household chores than a single person. Furthermore, in case of dependency, the spouse is usually the primary caregiver, thus delaying or altogether avoiding the need for entry into long-term care.

Strengths and Limitations of the study

Our study population comprised a sample of individuals recruited by a poll institute in four European countries, and is likely not fully representative of the whole European population of persons aged over
65 years. However, our approach is innovative, and enables analysis of the different components that underpin the perception of the place of residence in the elderly.

Conclusions And Implications
Entry into a nursing home is often experienced as a profound rupture, and this transition should be guided and anticipated. Understanding the representations that elderly Europeans have of their home makes it possible to define profiles that can serve as a basis for recommendations that will help newly arriving elders to better accept and integrate their new life in the nursing home. Other factors also play an important role in a person’s ability to construct a new “home” for themselves in a nursing home. The welcome that is extended to new residents, and the understanding shown by professionals of the psychological factors at stake can create a more empathic attitude and help to improve integration.

Availability Of Data And Materials
The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Abbreviations
SOC
Selection Optimization and Compensation

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SS, conceived the study idea and design in collaboration with JC, SZ, and AL. SS performed the statistical analyses and wrote the first draft of the manuscript; JC, SZ, AL, PEH, DA, MD, LG and SS contributed to the interpretation of the results and writing of the manuscript. All authors approved the final version for submission.

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**Ethics declarations**

**Ethics approval and consent to participate**

All legal conditions for surveys were respected, and the French national commission governing the application of data privacy laws (the “Commission Nationale Informatique et Libertés”) issued approval for both projects. Since the study was strictly observational and used anonymous data, in accordance to the laws that regulate “non-interventional clinical research” in France, namely articles L.1121-1 and R.1121-2 of the Public Health Code, did not require the written informed consent from the participants or the authorization from any other ethics committee to conduct this survey.

**Consent for publication**

Not applicable

**Competing interests**

The authors declare that they have no competing interests.

**Tables**

**Table 1: Characteristics of the study population**

| Characteristic | Group 1 (N=994): % | Group 2 (N=786): % | Group 3 (N=1014): % | Group 4 (N=187): % | Group 5 (N=470): % | Group 6 (N=709): % | TOTAL (N=4160) |
|---------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|
| Country       |                   |                   |                   |                   |                   |                   |                 |
| Germany       | 25.30             | 26.99             | 32.45             | 38.99             | 11.48             | 11.80             | 1003           |
| Belgium       | 30.59             | 31.97             | 22.10             | 20.60             | 26.50             | 18.90             | 1076           |
| France        | 26.40             | 20.28             | 23.60             | 26.00             | 25.10             | 24.20             | 1000           |
| Italy         | 17.80             | 20.80             | 21.90             | 14.40             | 36.90             | 45.00             | 1081           |
| Sex           |                   |                   |                   |                   |                   |                   |                 |
| Men           | 53.30             | 48.00             | 43.00             | 40.00             | 30.50             | 27.70             | 1771           |
| Women         | 46.70             | 52.00             | 55.70             | 60.00             | 69.50             | 72.30             | 2389           |
| Age (years)   |                   |                   |                   |                   |                   |                   |                 |
| 65-69         | 36.10             | 43.50             | 38.30             | 46.60             | 22.90             | 19.80             | 1414           |

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| Class 1: Wealthy Belgians | % Modality in the class | % Modality in overall sample |
|--------------------------|-------------------------|-----------------------------|
| Fond of their current residence | 96.02 | 90.13 |
| Physically and mentally fulfilled | 79.61 | 67.79 |
| Rely on their spouse | 70.40 | 59.53 |
| Variable                                                      | Class 1 | Class 2 Flexible single people | Class 3 Wealthy Germans |
|---------------------------------------------------------------|---------|--------------------------------|-------------------------|
| Likes to have fun                                            | 59.58   | 53.81                          | 84.06                   |
| Confident in the future                                      | 53.03   | 43.50                          | 72.73                   |
| High income                                                  | 28.90   | 32.54                          | 52.54                   |
| High level of education                                      | 34.97   | 67.40                          | 73.63                   |
| Shared accommodation with other people                       | 2.37    | 67.24                          | 52.43                   |
| Keep and adapt current accommodation                         | 78.95   | 32.19                          | 90.13                   |
| Fond of furniture and personal belongings                    | 53.29   | 53.64                          | 85.35                   |
| Male sex                                                     | 53.29   | 32.19                          | 57.42                   |
| Belgian                                                      | 30.59   | 60.73                          | 24.11                   |
| Class 2 Flexible single people                               |         |                                |                         |
| Age 65-69 years                                              | 43.50   |                                | 32.45                   |
| Start a new life                                             | 53.81   |                                | 27.00                   |
| Like to please people                                        | 48.37   |                                | 73.63                   |
| Romantic feelings                                            | 67.40   |                                | 64.48                   |
| Like to have fun                                             | 81.51   |                                | 52.54                   |
| Feeling of loneliness                                        | 46.51   |                                | 32.51                   |
| Fond of current accommodation                                | 84.06   |                                | 72.73                   |
| Satisfied with current accommodation                         | 53.64   |                                | 73.63                   |
| Keep and adapt current accommodation                         | 55.70   |                                | 90.13                   |
| Attached to their habits                                     | 60.73   |                                | 52.43                   |
| Fond of furniture and personal belongings                    | 52.54   |                                | 35.43                   |
| Organize outings more often                                  | 73.63   |                                | 52.43                   |
| Don’t rely on the neighbours                                 | 55.02   |                                | 48.32                   |
| Anticipating old age                                         | 80.51   |                                | 52.43                   |
| Confident in the future                                      | 56.87   |                                | 52.43                   |
| Move to new accommodation more suited to physical state      | 53.01   |                                | 52.43                   |
| Female sex                                                   | 51.98   |                                | 24.11                   |
| German                                                       | 27.00   |                                | 24.11                   |
| Class 3 Wealthy Germans                                      |         |                                |                         |
| German                                                       | 32.45   |                                | 32.45                   |
| Satisfied with current accommodation                         | 90.10   |                                | 90.10                   |
| Attached to their habits                                     | 72.73   |                                | 72.73                   |
| Fond of furniture and personal belongings                    | 60.31   |                                | 60.31                   |
| Keep and adapt current accommodation                         | 81.84   |                                | 81.84                   |
| Hold a high opinion of their current accommodation           | 85.35   |                                | 85.35                   |
| Statement                                                      | Class 4: Low-income Germans | Class 5: Isolated Italians |
|---------------------------------------------------------------|----------------------------|----------------------------|
| Life is a source of pleasure                                  | 94.13                      | 78.24                      |
| Physically and mentally fulfilled                             | 84.07                      | 67.97                      |
| Feel younger than their age                                   | 78.24                      | 62.10                      |
| Enjoy going out to restaurants                                | 81.24                      | 68.27                      |
| Living maritally (couple)                                     | 75.34                      | 65.11                      |
| Independent                                                   | 82.28                      | 73.02                      |
| Rely on their children                                        | 83.05                      | 71.17                      |
| Can save money                                                | 54.78                      | 44.98                      |
| Class 4: Low-income Germans                                   |                            |                            |
| No ties to their current accommodation                        | 77.03                      | 9.86                       |
| Rented accommodation                                          | 46.35                      | 26.86                      |
| Attached to the advantages offered by their accommodation     | 11.28                      | 35.17                      |
| Attached to their habits                                      | 8.15                       | 37.28                      |
| Fond of furniture and personal belongings                     | 6.74                       | 40.66                      |
| Satisfied with current accommodation                          | 56.05                      | 71.64                      |
| Move to live in another region                                | 44.65                      | 21.33                      |
| Move to live closer to facilities/services                    | 47.16                      | 30.67                      |
| Cannot imagine living in a nursing home                       | 49.57                      | 37.00                      |
| Rely on their spouse                                          | 24.51                      | 18.63                      |
| Moderately mentally and physically fulfilled                  | 40.89                      | 32.19                      |
| Life is a source of pleasure                                  | 65.67                      | 78.24                      |
| No family gatherings                                           | 44.55                      | 21.65                      |
| Rarely anticipate old age                                     | 40.18                      | 24.20                      |
| Low income                                                    | 34.46                      | 27.87                      |
| Can save money                                                | 22.87                      | 40.82                      |
| German                                                        | 38.99                      | 24.11                      |
| Class 5: Isolated Italians                                     |                            |                            |
| Minimal confidence in the future                              | 78.23                      | 49.86                      |
| Not mentally and physically fulfilled                          | 64.40                      | 32.19                      |
| Suffer from loneliness at times                               | 61.16                      | 23.37                      |
| Move to smaller accommodation that they really like           | 42.09                      | 29.23                      |
| Move to new accommodation more suited to physical state       | 46.69                      | 34.35                      |
| Move to an assisted living apartment                          | 40.02                      | 28.32                      |
| Fond of furniture and personal belongings                     | 46.83                      | 40.66                      |
| Category                                                                 | European | Italian |
|--------------------------------------------------------------------------|----------|---------|
| Attached to their habits                                                | 42.61    | 37.28   |
| Don’t rely on their friends                                             | 52.60    | 33.57   |
| Low satisfaction with current accommodation                            | 52.59    | 28.36   |
| Independent                                                              | 52.41    | 73.02   |
| Low income                                                               | 42.73    | 27.87   |
| Low level of education                                                  | 46.23    | 30.13   |
| Widow(er)                                                               | 41.03    | 21.38   |
| Age ≥ 80 years                                                           | 31.67    | 18.20   |
| Italian                                                                  | 36.90    | 25.98   |

**Class 6 : Italian homebirds**

| Category                                                                 | European | Italian |
|--------------------------------------------------------------------------|----------|---------|
| Moderately mentally and physically fulfilled                            | 41.80    | 25.82   |
| Female sex                                                               | 72.28    | 57.42   |
| Age 75-79 years                                                          | 38.33    | 30.73   |
| Living maritally (Couple)                                               | 46.94    | 65.11   |
| Rely on their spouse                                                    | 39.52    | 59.53   |
| Often fond of their current accommodation                               | 96.94    | 90.13   |
| Attached to their habits                                                | 79.58    | 48.32   |
| Fond of furniture and personal belongings                               | 57.91    | 35.42   |
| Move to new accommodation more suited to physical state                 | 28.20    | 34.35   |
| Can save money                                                           | 36.80    | 40.82   |
| Anticipate old age                                                       | 69.28    | 75.79   |
| Confident in the future                                                 | 38.53    | 50.04   |
| Independent                                                              | 60.96    | 73.02   |
| Low income                                                               | 35.59    | 27.87   |
| Italian                                                                  | 45.05    | 25.99   |

**Figures**
Figure 1

Categories identified by principal components analysis, by country. Profiles of European elders identified by principal components analysis.