



LUND UNIVERSITY

Housing adaptations from the perspectives of Swedish occupational therapists.

Malmgren Fänge, Agneta; Lindberg, Katarina; Iwarsson, Susanne

Published in:
Scandinavian Journal of Occupational Therapy

DOI:
[10.3109/11038128.2012.737368](https://doi.org/10.3109/11038128.2012.737368)

Published: 2013-01-01

[Link to publication](#)

Citation for published version (APA):
Malmgren Fänge, A., Lindberg, K., & Iwarsson, S. (2013). Housing adaptations from the perspectives of Swedish occupational therapists. *Scandinavian Journal of Occupational Therapy*, 20(3), 228-240. DOI: 10.3109/11038128.2012.737368

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

LUND UNIVERSITY

PO Box 117
221 00 Lund
+46 46-222 00 00

ABSTRACT

The aim of this study was to investigate how occupational therapists in Sweden administer housing adaptation cases, how they perceive the housing adaptation process, and which improvements they consider necessary. A total of 1,679 occupational therapists employed by county councils or local authorities (and are involved in housing adaptations) participated in a web-based survey. The survey targeted issues related to referral and needs identification, assessment, certification, case progress feedback and evaluation. Less than half of the occupational therapists systematized the assessment prior to intervention and very few conducted any evaluation afterwards. Feedback from workmen or grant managers to the occupational therapists on each case's adaptation progress was rare but asked for. The majority of the participants were satisfied with the housing adaptation process in general, while at the same time they indicated a need for further improvements of the process. Differences between occupational therapists related to employer and year of graduation were found on the majority of the targeted issues. To conclude, a very large extent of housing adaptations seem to be based on non-standardized procedures for assessment, and only few of them are evaluated systematically.

Keywords: web-based survey, case management, evidence-based practice, home modification.

Housing adaptations from the perspectives of Swedish occupational therapists

Abstract: The aim of this study was to investigate how occupational therapists in Sweden administer housing adaptation cases, how they perceive the housing adaptation process, and which improvements they consider necessary. A total of 1,679 occupational therapists employed by the county councils' or the local authorities (and are involved in housing adaptations) participated in a web-based survey. The survey targeted issues related to referral and needs identification, assessment, certification, case progress feedback and evaluation. Less than half of the occupational therapists systematized the assessment prior to intervention and very few conducted any evaluation afterwards. Feedback from workmen or grant managers to the occupational therapists on each case's adaptation progress was often asked for but rarely given. The majority of the participants were satisfied with the housing adaptation process in general, while at the same time they indicated a need for further improvements of the process. Differences between occupational therapists related to employer and year of graduation were found on the majority of the targeted issues. To conclude, to a very large extent of housing adaptations seem to be based on non-standardized procedures for assessment, and only few of them are evaluated systematically.

INTRODUCTION

Housing adaptation is a common compensatory intervention used by occupational therapists to enhance independent living (1-5), to increase usability in the home and to support activity and participation. In a housing adaptation, the physical home environment is altered, and the intervention is individually tailored in order to meet the specific needs of the person in the home. The assumption underlying the intervention is that reducing physical environmental barriers in the home will enhance activity and participation, that is, the intervention targets person-environment-activity (P-E-A) transactions.

While housing adaptations are assumed to enhance activity and participation, studies report contradictory findings in this respect. In a systematic overview of studies targeting outcomes of housing adaptations (6), substantial evidence of reduced disability, for example dependence in ADL and IADL, was found in some studies, (3, 5, 7-12) but other studies (13-15) indicated that the intervention had no such effects. Instead, multidimensional interventions comprising a variety of strategies, e.g. measures targeting the person, activity and participation as well as the housing environment were most successful (6). It is important to note that each country where housing adaptations are part of the national legislation has its own regimen and procedures governing the intervention. This leads to considerable cross-national differences e.g. in terms of availability, funding, construction, delivery standards and integration with other types of interventions. In Sweden, health care is to the largest extent provided by the county councils and the regions (N=20), while the local authorities, i.e. the municipalities,

(N=290) are responsible for matters relating to the inhabitants of the local authority and their immediate environment, including social services, housing etc. Since 1994, the local authorities are also responsible for care for older people and people with disabilities. Occupational therapists have traditionally been employed by the county councils, but an increasing proportion is employed by the local authorities.

At a total cost of SEK 962 million, 72,900 housing adaptations were granted in Sweden in 2010 (17). The intervention is governed by specific legislation linked to the planning and building act (4, 18), i.e. by legislation not related to the health care legislation. A housing adaptation is mostly initiated by the client, relatives, or by a health professional. A grant covering the full costs of the intervention can be applied for at the local authorities, who are also responsible for financing and administrating the grant. The grant is provided irrespective of the applicant's financial situation, and independently of whether the home is rented or owned. In order to apply for a grant, a certificate stating the need for the adaptation for independent living, issued by a health professional, (most often an occupational therapist) is required. Preferably, a home visit is conducted where client expectations and housing adaptation needs are identified and articulated, and thereafter, the formal certification stating the need for a housing adaptation is issued by the occupational therapist, and attached to the client's formal grant application. The application is administered and assessed by the housing adaptation grant manager in the local authority, who also takes the formal decision of approval or rejection. In the case of approval, the initiative and responsibility for effectuating the housing adaptation rests with the applicant, who contacts and makes appointments with the workmen and

monitors the adaptation process. After the housing adaptation is finalized, the invoice is sent to the granting authority for administration.

Formally, after the certification, the occupational therapist is not involved in the intervention, since it is a case between the applicant and the granting authority. That is, it is a decision of the client and the granting authority to what extent the occupational therapist receives any case progress feedback and how this is communicated. In addition, many different stakeholders are involved in housing adaptations, each applying his or her personal or professional approach to the intervention. Depending on the characteristics in population composition, types and standards of housing there are differences between local authorities in the organization of housing adaptations.

There are no formal educational or professional requirements on the grant manager, but historically they have had some administrative or technical type of education or training. However, increasingly across Sweden the local authorities employ occupational therapists one these positions.

Taking these different aspects into consideration housing adaptations most probably poses considerable challenges to occupational therapy practice. How this challenge is solved, and how housing adaptations are conducted is, however, to a large extent unknown. Therefore, the aim of this study was to investigate how occupational therapists in Sweden administer housing adaptation cases, how they perceive the housing adaptation process and which changes and improvements they consider necessary.

MATERIALS AND METHODS

Study design

A web-based survey among occupational therapists in Sweden was conducted in collaboration between the Department of Health Sciences, Lund University, Sweden and the Swedish Association of Occupational Therapists (FSA).

Sampling procedure and respondents

The FSA organises 95 % of Sweden's registered occupational therapists, and on January 1st, 2007, the association had 9,464 registered members. In order to become eligible for participation in the survey, and as part of their professional duties, the occupational therapists had to be involved in housing adaptations on a regular basis, defined as at least once a month. Since the majority of housing adaptations are initiated, assessed and certified by occupational therapists employed by the municipalities or at the primary health care centres in the county councils, the occupational therapists with this type of employment constituted our target population.

Based on FSA member records data from 2006, 2,945 occupational therapists fulfilled these requirements and were thus eligible for inclusion. Out of them, 2,819 were reached by the survey and 2,303 (82%) completed it. In some municipalities, occupational therapists administer and authorise the grants only, while they are not the client-responsible occupational therapist. Since they are only involved in a minor part of the housing adaptation process they were excluded from the target population. This was

considered by way of three initial questions in the survey, where all respondents stated their main duties in relation to housing adaptations. In total 1,679 occupational therapists met the inclusion criteria, thus constituting our final sample. A description of the participants is given in Table 1.

TABLE 1

Survey questionnaire

The questionnaire was constructed based on previous research on housing adaptations (1, 7, 12-13), current Swedish housing adaptation legislation, and national guidelines (4, 18). That is, in order to come up with a questionnaire covering the most commonly recognized steps of the housing adaptation process, we scrutinized a multitude of data sources aiming at identifying the different steps that were most utilized in research and practice. They were then operationalized in our questionnaire.

The final version of the questionnaire covered six major topics reflecting the most important steps in a housing adaptation process: Assessment (prior to intervention), follow up/evaluation, certification, and case progress feedback. Questions about perceived quality of housing adaptations, and perceived quality development needs were also included. By way of four to thirteen more detailed questions, each major topic addressed specific issues, set forth by questions. For five of the topics (question 1-5) an alternative question, “Others”, was applied allowing the respondent to state other procedures, and/or to add open-ended comments not mentioned. The rationale for applying “Others”, and thus to ask for open-ended comments, was the fact that there is no defined step-wise procedure for housing adaptation case management which is commonly

agreed upon. Thus, opening up for comments was our way of increasing our knowledge on what occupational therapists do during a housing adaptation process. For an overview of the questionnaire, see table 2.

TABLE 2

In order to optimise face and content validity, the questionnaire was developed and tested in an iterative process. Four expert group 1.5-2 hour meetings were carried out, engaging occupational therapists that fulfilled the inclusion criteria for the survey. In total, 17 occupational therapists working in different southern Swedish municipalities (19,000-276,000 inhabitants and with different organisations of the housing adaptation administration) participated. At each expert group meeting, the occupational therapists first filled in the current version of the questionnaire individually. Thereafter, their opinions about the content were discussed in groups led by the second author (KL). Each meeting was followed by discussions among the researchers, and revisions were decided upon based both on the occupational therapists' suggestions as well as on scientific methodology requirements. This iterative development process lasted until no further revisions were suggested by the expert groups. In the next step, and in order to test the questionnaire within the web-based context, an individual test-link to the web-site comprising a next-to-final version of the questionnaire was sent to eight occupational therapists. They were asked to comment on the feasibility of the survey format, not specifically on the content of it. Since no revisions were suggested, we therefore concluded that the questionnaire was ready for use.

The survey was conducted in Swedish and the translated in the publication phase by an authorized translator.

Data collection

The survey, including reminders, was administered by one single employee at the FSA head office. It was distributed via the member e-mail addresses registered by June 1st, 2007. Via e-mail each occupational therapist was sent a web-link, accompanied by a letter explaining the purpose of the survey, how to navigate it, and with contact details to the first and second authors. The survey was open throughout June, July and August 2007. Reminders were sent out three times, according to a pre-decided scheme: At a response rate of 50%, after two weeks, a reminder was sent to those who had not opened the web-link. After another week, those who had opened and partly responded to the survey were sent a reminder to complete it. In mid-August, a final reminder was sent to those who had not opened the survey at all, as well as to those who had responded partly but not completely. After another two weeks the survey was closed. Thereafter, all data were transferred from FSA to the researchers at Lund University in decoded format, that is, no single respondent could be identified.

A data registration request, according to the law regulating information on individuals, was registered at the legal unit at Lund University. The respondents were informed in writing that their participation was voluntary and that no single individual could be identified.

Data analysis

Data from the survey were both quantitative and qualitative, and analysed accordingly.

For the quantitative survey data, frequencies of the responses to each question were calculated based on the total sample. In addition, differences between groups were calculated based upon:

1. Type of employment (county council or local authority). The rationale behind this is the fact that since occupational therapists in the local authorities are employed by the housing adaption granting authority, their opportunities for close collaboration with different actors in the process might be better compared to their colleagues in the county councils. Another underlying rationale is the fact that the county councils are more research-intense organizations and therefore it is assumed that the occupational therapists here are more used to applying research based methodology in the daily practice.
2. Year of occupational therapy graduation (graduating before 1996/during 1996 or after). The rationale for this dichotomisation was the extension of the occupational therapy programme in Sweden from 2.5 years to 3 years, with the first students following this extended programme graduating in spring 1996. The programme has a more academic approach, and thus these occupational therapists might apply a more systematic approach to practice than their colleagues that graduated earlier.

Descriptive statistics were used for calculating frequencies for the total sample

Differences between groups as described under 1 and 2 above were calculated by means

of Mann-Whitney U-test. Due to the risk of mass significance, the level of statistical significance was set to $p < 0.000$. All calculations were computed using SPSS versions 14.0, 15.0 and 20.0.

Since each question had to have a response in order to advance to the next, no data were missing.

The qualitative data from the open-ended responses to “Other” under each major topic consisted of short sentences or single words, and were analysed by means of content analysis (19). The responses were condensed, and in an iterative process meaning units were identified and categorised (20). The number of respondents commenting on each question ranged from $n=150$ on the question concerning follow-up and evaluation, to $n=435$ on the question concerning what kind of education they had that was specifically related to housing adaptations.

RESULTS

In the results, both quantitative and qualitative findings are reported under each heading. The main topics addressed in the questionnaire (see table 2) are presented in a condensed format under the different headings below. The number of respondents whose comments are included in the respective qualitative data category below is indicated within the parentheses.

Needs identification, assessment and follow-up/evaluation

Under this heading, answers to questions 1a-d, 2a-d, 3a-d, 6a-c, 6o-p, and 7b-c, 7a-k is reported together with open responses to questions 1-3.

The majority of the occupational therapists never or only sometimes used structured assessment to collect information on functional capacity, activity, participation, or the home environment prior to intervention. Instead, unstructured interviews/observations at home visits were most common. When it came to the evaluation of the intervention, 13% of the occupational therapists always carried out an evaluation, however, the majority of them never or only occasionally systematized the evaluation procedure. Frequencies of responses concerning assessment and follow up/evaluation are reported in table 2.

In terms of differences among occupational therapists, no significant differences between groups were found, with the exception that those employed by the county councils to a greater extent than their colleagues seemed to use the telephone or to conduct interviews with proxies, e.g. close relatives to assess and evaluate the intervention. Also, occupational therapists graduating 1996 or later, seemed to evaluate the intervention by means of telephone interview with higher marks than their colleagues graduating earlier. The occupational therapist employed by the local authorities perceived the referral, needs identification, and assessment procedures to be significantly better than their colleagues employed by the county council, while those graduating before 1996 perceived the housing adaptation process as a whole to be significantly better than the occupational therapists graduating later (table 3).

Open-ended comments from 262 occupational therapists were related to the assessment of functional capacity, activity and participation, while comments from 192 occupational therapists related to the assessment of the home environment. One hundred and sixty one respondents commented on evaluation/follow-up.

Tailoring the data collection (n=154).

The occupational therapists combined structured and non-structured assessments, telephone interviews and interviews with relatives, staff, etc., tailored to different clients based on their specific situation. They also based their decisions on assessments conducted by other professionals, mostly by physiotherapists and doctors, as found in medical records. When the occupational therapist had continuing contact with the client, and in case of minor adaptations, they often relied on information about the home environment from relatives, property-owners, and building engineers instead of conducting their own assessments.

Need for standardizing the process (n=82).

This specifically related to the experienced need for a standardized methodology for the entire housing adaptation process, while it at the same time was difficult to find suitable assessment instruments:

“I have implemented housing adaptations for 30 years, but see the need for an instrument and a structured interview before one can go on one’s experience. Sometimes, I can think

Housing Enabler is too detailed. There can easily be more focus on that than on the patient's own needs..."

Responsibility to conduct evaluations (n=111)

The full responsibility for evaluation as it was the duty of all health professionals was claimed by some, while others explicitly declared that evaluation was not their responsibility since housing adaptations after certification is a case between the granting authority and the client solely.

Need for more knowledge (n=33)

This category mainly comprised the perceived need of more knowledge about current research and evidence concerning housing adaptation assessment and results. They also indicated that by being involved in physical planning at the local authority level, their knowledge and experiences from housing adaptations could be utilized more generally in the society.

Certification, application and decision procedures

Under this heading, answers to questions 4 a-h, 6 d-h, 6 m, and 7 a-k are reported together with open responses to question 4.

The majority of the occupational therapists in this study stated the client's functional limitations, as well as activity and participation in the housing adaptation certificates. To a very large extent they also stated the environmental barriers found in the home, and

they also made suggestions on what type of adaptation was needed. On the other hand, social circumstances around the client or expected changes in client conditions were more rarely described.

With respect to differences among groups, occupational therapists employed by the county councils stated more information in the certificates than their colleagues employed by the local authorities while there were no differences in terms of year of graduation. On the other hand, occupational therapist employed by the local authorities considered the certification procedure, including client participation, to be better than their colleagues in the county councils. They also to a significantly higher extent found it important to improve the structure of the process as well as the organisation around the intervention. With respect to graduation year, occupational therapists graduating earlier than 1996 to a higher extent called for a better structure of the entire process, increased information and an improved organisation around the intervention than their colleagues graduating later did (table 3).

In all, 253 respondents commented on the questions related to the certificates, the application and the grant decision procedures.

Contact information (n=26)

This category comprised information on whom the stakeholders could contact along the process, as well as specific requests from the occupational therapist concerning feedback on case progress, while the category

Housing conditions (n=35)

This category related to information on the design, standards, and conditions of the house.

Client information (n=108)

The content in this category related to information about how urgent the intervention was and to other timing considerations, to other intervention alternatives considered and to possible consequences for the client if the application was rejected.

Formalities (n=127)

Discrepancies between occupational therapist and client judgments were targeted here, as well as the design and exact wording of the certificates. Some occupational therapists were explicitly asked not to suggest any adaptations since this decision should be left to the local authority official and/or the building engineer, while others were asked to add blue-prints and detailed adaptation suggestions.

Efficiency of the process (n=88)

Issues related to the time between application, approval and adaptation start were targeted in this category. It was often considered too long due to e.g. difficulties in finding workmen available for the job, or long waiting lists. On the other hand, many respondents considered that the process worked well with no specific needs for further development.

Cooperation and case progress feedback

Under this heading, answers to questions 5 a -f, 6 i- l, and 6 n are reported together with open responses to question 5.

Twenty five per cent of the occupational therapists reported that they never automatically received any case progress feedback. Instead, they took all necessary contacts themselves (table 2). There were, however, differences between groups of occupational therapists in that the way they received case progress feedback differed among them, and they who had graduated earlier than 1996 received more case progress feedback than their colleagues who had graduated later. However, the opposite was true for how they perceived the case progress feedback where those graduating later considered it to be better than their colleagues. The same was true for cooperation with other actors along the adaptation process and for the housing adaptation process as a whole (table 3).

As concerns the open-ended question on case progress feedback, 260 occupational therapists commented.

Lack of formal structures (n=138)

This emerging category revealed that the occupational therapists more or less always received a copy of the approval or decline of the application; however, it often came after the adaptation was finalized, and it was only very rarely that they or their clients were notified in the case of problems. On the other hand, some municipalities had formalized

feedback structures that worked well, most often including regular meetings with the local authority officials.

Ethical dilemmas (n=24)

This category raised issues concerning ethically difficult situations due to current legislation and organization. The occupational therapists found it difficult to try out assistive devices if the precondition of use, i.e. the housing adaptation was at risk of being turned down. They most often also judged the clients' problems based on ethical standards that differed from that of the granting authority.

“The assignments concerning stair lifts are very difficult. I feel very alone in my judgement. Difficult ethical dilemmas. Is it OK that an applicant, for example, can only go out once a day, is it reasonable? The risk of falling, should it matter? If the applicant gets a place in geriatric care wrongly, i.e. only because of the stairs, this involves increased costs for the local authority. This is not right either? The municipal building office say that the applicant is able to walk or not walk, but it is not so simple? I consider that there is a fine distinction and this must be able to be written in a certificate as a basis for making a decision. Not just the word is necessary. ”

To sum up, the results of this study show that only a minority of the occupational therapists structured the assessment prior to housing adaptation, and even fewer conducted any evaluation afterwards. There was a lack of systematization of the entire housing adaptation process, both with respect to assessment and evaluation and to case

progress feedback. A need for more knowledge about assessment and evaluation methodology as well as the results of housing adaptations was indicated, together with an expressed need for a more structured and efficient process. Different perceptions about their professional responsibilities in terms of evaluation of the intervention were highlighted, and the content of the certificates was an issue of diversity and concern. The occupational therapists also raised ethical concerns due to the housing adaptation legislation and organization, and they emphasized the importance of communication between stakeholders and the consequences of not doing so.

DISCUSSION

To the best of our knowledge, this is the first study investigating housing adaptations from the perspective of occupational therapists in Sweden.

One of the most prominent findings was that in spite of the fact that the occupational therapists more or less always conducted a home visit to assess the need for a housing adaptation only a minority of them structured the assessment of the client's functional capacity, activity and participation by way of standardised instruments and procedures. Instead, they relied on non-standardized procedures to guide the intervention. That is, the majority of housing adaptations in Sweden seem to be granted and conducted without being based on structured, standardised assessment related to the aims and goals of the intervention i.e. an independent life in the own home. It is also surprising that the home environment, i.e. the direct target for the intervention, to an even lesser extent was assessed using standardized methodology than function, activity and participation. Similar findings have been demonstrated in previous research investigating housing

adaptations (1, 6-7, 12, 21-22), and thus, it seems rightful to conclude that the majority of housing adaptations in Sweden are conducted without being based on systematic assessments. Instead, it seems as if occupational therapists tailored the assessment procedures to each client. Each client has his or her own needs and preferences, and each one lives in a specific physical and social context, and therefore it is crucial to tailor the housing adaptation process throughout for each client. However, there is no contradiction between the need for individual tailoring and the use of structured methodology. In fact, without structured assessment and documentation as well as clearly-defined and documented goals and objectives, the results of an intervention can never be evaluated (23).

The lack of standardized assessments prior to intervention also most probably affects the documentation (23, 24), as was reflected in the considerable variation in what the occupational therapists most often stated in the housing adaptation certificates. National regulations (17) state what should be included in a housing adaptation certificate, but from our study it seems as if these regulations are not fully followed in practice. There was a difference among occupational therapists in that those employed by the county councils stated more information than their colleagues employed by the local authorities. One possible explanation could be the fact that the county councils traditionally have been responsible for all health care provided in Sweden and therefore also have stronger traditions and experiences on structured client assessment, evaluation and documentation. Thus, it is possible that the attitude inherent in the county council health care practice both enhances and puts pressure on each occupational therapist to assess, document and

evaluate their interventions. At the same time, it is previously known that occupational therapists in the local authorities often lack administrative and professional support to structure and develop their practice (see e.g. 25).

Most important, even though data reflecting the objectives of the intervention were documented in the certificates, they were not based on systematic assessments. This lack of systematic data of course affects the possibility to evaluate the intervention, and in this perspective, it is not surprising that the majority of the occupational therapists did not carry out a systematic evaluation at a home visit as a standard action after the adaptation was finalized. After all, systematic evaluations may not be considered worthwhile if systematic data from assessments prior to intervention are not available.

In fact, some of the occupational therapists did not consider evaluation to be their professional responsibility. From a legislation perspective, this seems to be a correct standpoint as the obligation to evaluate lies with the granting authority. However, according to the Swedish health care legislation, each occupational therapist is responsible for evaluating their interventions, and thus, the responsibility for evaluation of the housing adaptation should lie with both the occupational therapist, and the granting authority. In this context it is also important to highlight the fact that no differences among clients in terms of availability of the intervention should prevail due to differences among local authority routines and among individual occupational therapist, but without standardized procedures for assessment and evaluation such goals are challenged.

The lack of structure in both assessment, documentation and evaluation raise the question of whether occupational therapists not only have knowledge about which assessment instruments that are based on research but also how to interpret the results and transfer them into practice. Taking research into practice is often a difficult and lengthy process, depending both on the type of intervention as well as on attitudes within the organisation, and many efforts have been taken over the years. For occupational therapy in general, and for housing adaptations in particular, there seems to be a considerable challenge inherent in taking research and knowledge into practice procedures.

An important aspect of monitoring client cases is the communication and feedback procedures that are established for efficiency and effectiveness. In this study, the occupational therapists indicated that they lacked feedback structures and that they found the process insufficient, independently of where they were employed. It is a well-known fact that poor inter professional collaboration around clients affects intervention results negatively (see e.g. 26). In the case of housing adaptations there is a multitude of actors involved, each applying his or her professional standards and perspectives, and thus the need for clear-cut feedback procedures is considerable. Such procedures would most probably make more efficient use of resources and enhance intervention goal achievement.

Another important finding from this study is that quite a few occupational therapists found themselves in ethical dilemmas, being trapped between constraints posed by the local authority and the need of the client. Probably such dilemmas to a large extent are due to the different professional perspectives and obligations, and the lack of mutual

understanding. These ethical issues need to be communicated and discussed among stakeholders since they affect the organization of housing adaptations as well as the results of them (26).

Methodological considerations

The results from this study are based on data from 1,679 occupational therapists in Sweden, involved in housing adaptations. The rate of responses to the survey was high, thus strengthening the validity of the data. To a large extent this is probably thanks to the use of a survey with an electronic format that was previously known to the respondents and coming from a well-known source, i.e. their professional organisation. We also applied a predefined, structured scheme for sending reminders and this most probably contributed to the high response rate, in spite of the fact that the survey was conducted during the summer months.

In terms of participant inclusion and exclusion criteria, we decided to exclude occupational therapists working primarily with housing adaptation grant administration as the major part of their professional duties. These occupational therapists are always employed by the local authorities, but rarely involved in other aspects of the intervention that the granting procedure. The exclusion of them from the study can, of course, be questioned since they possess considerable in-depth knowledge on the intervention. Instead, we concluded that capturing the practice and experiences among occupational therapists that assess and certify housing adaptation needs and are responsible for other

interventions to the client would serve our purpose better and thus increase the validity of our findings.

With respect to data collection methodology and sampling criteria, asking professionals to respond to questions related to their own practice always provides a risk for bias in terms of overly positive answers. However, people who respond to questionnaires via the internet seemed to feel safer concerning their anonymity than people who participated in interviews and/or mailed questionnaires, and therefore to a higher extent provided answers that reflected reality (27). Thus, it seems adequate to conclude that our findings in this respect mirror real practice. In order to gain as much knowledge as possible from the data we chose to use the open-ended comments to some questions in the survey. Even though not all occupational therapists commented on each question, the findings added considerable value, strength and understanding to the quantitative data. The answers to the open-ended questions also added new important knowledge that we had not been able to achieve by means of the predefined questions in the survey. This knowledge is important for the understanding of the housing adaptation process and for the design of further studies on housing adaptation practices in Sweden and internationally.

When designing this study we hypothesised that there were differences between occupational therapists on how they conducted and perceived housing adaptations, in particular in relation to where they were employed and year of graduation. Even if some significant differences among groups were found, the results do not confirm our rationale for group dichotomization, and should be interpreted with great caution. Instead, it is the

whole picture of how housing adaptations are assessed, evaluated and documented, as well as how the cooperation and case progress feedback among the different actors actually is practiced that is important.

To conclude, across Sweden housing adaptations to a large extent seem to be conducted without being based on systematic, structured assessments and evaluations based on research. As a consequence, client-specific activity and participation needs might not be fulfilled in spite of a costly housing adaptation. There is a professional challenge when it comes to applying current research and evidence on housing adaptations in practice, and there seem to be a need for a systematic case management strategy that can improve the efficiency, effectiveness and satisfaction of the intervention. The results from this study constitute an important part of the knowledge base necessary for the development, testing and evaluation of such a strategy.

ACKNOWLEDGEMENTS

This study was accomplished within the context of the Centre for Ageing and Supportive Environments (CASE), at Lund University, funded by the Council for Working Life and Social Research, FAS, in Sweden. The study was also funded by the Research Council for Environment, Agricultural Sciences and Spatial Planning, FORMAS, in Sweden and by the Swedish Research Council, VR. We extend our sincere thanks to Dr I-B.

Lindström and Mrs A. Thor at the Swedish Association of Occupational Therapists, FSA, for approving, administering and coordinating the survey, and to LicSci V. Horstmann for statistical assistance. Adjunct professor R. Risser provided valuable input during the planning phase of this study.

REFERENCES

1. Fänge A, Iwarsson S. Challenges in the development of strategies for evaluation of housing adaptations. *Scand J Occup Ther* 2007; 14:140-9.
2. Gitlin LN. Environmental adaptations for older adults and their families in the home and community. In I. Söderback, Ed. *International handbook of occupational therapy interventions*. Springer Science + Business Media, LCC; 2009.
3. Stark S. Removing environmental barriers in the homes of older adults with disabilities improves occupational performance. *OTJR: Occupation, Participation and Health* 2004;24:32-9.
4. Svensk författningssamling, SFS 1992: 1574. Lag om bostadsanpassningsbidrag, mm. [Swedish Act on Housing Adaptation Grants. In Swedish].
5. Petterson I, Kottorp A, Bergström J, Lilja M. Longitudinal changes in everyday life after home modifications for people aging with disabilities. [Scand J Occup Ther](#) 2009;16: 78-87
6. . Wahl H-W, Fänge A, Oswald F, Gitlin LN, Iwarsson S. The Home Environment and Disability-related Outcomes in Old Age: What is the Empirical Evidence? *Gerontologist* 2009;48:355-368.
7. Pighill AC, Torgersen, DJ, Sheldon TA, Drummond AE, Bland MJ. Environmental Assessment and Modification to Prevent Falls in Older People. *J Am Geriatr Soc* 2011; 59:26-33.

8. Fänge A, Iwarsson S. Changes in ADL dependence and aspects of usability following housing adaptation - A longitudinal perspective. *Am J Occup Ther* 2005;59:296-304
9. Gill TM, Baker DI, Gottschalk M, Peduzzi, PN, Allore H, Byers A. A program to prevent functional decline in physically frail elderly persons who live at home. *New Eng J Med* 2002;347:1068-1074.
10. Gitlin LN, Corcoran M, Winter L, Boyce A, Hauck WW. A randomized, controlled trial of a home environmental intervention: Effect on efficacy and upset in caregivers and on daily function of persons with dementia. *Gerontologist* 2001;41:4-14.
11. Johansson K, Lilja M, Petersson I, Borell L. Performance of activities of daily living in a sample of applicants for home modification services. *Scand J Occup Ther* 2007;14:44-53.
12. Petersson I, Lilja M, Hammell J, Kottorp A. Impact of home modification services on ability in everyday life for people ageing with disabilities. *J Rehabil Med* 2008;40:253-260.
13. Chang JT, Morton SC, Rubinstein LZ, Mojica WA, Maglioni M, Suttorp MJ, et al, Interventions for the prevention of falls in older adults: Systematic review and meta-analysis of randomised clinical trials. *BMJ* 2004;328:680-687.
14. Lord SR, Menz HB, Sherrington C. Home environment risk factors for falls in older people and the efficacy of home modifications. *Age Ageing* 2006;35:ii55-59.

15. Gillespie LD, Gillespie WJ, Robertson MC, Kamb SE, Cumming RG, Rowe BH.
Interventions for preventing falls in elderly people. The Cochrane Database of
Systematic Reviews 2003; Issue 3.
16. Boverket. Bostadsanpassningsbidragen 2010; 2011, Boverket: Karlskrona.
[Boverket. Housing Adaptation Grants 2010. In Swedish].
17. Boverkets författningssamling, BFS 1992:46. Boverkets föreskrifter till lagen
(1992:1574) om bostadsanpassningsbidrag mm. [Boverket Regulations to the
Swedish Act on Housing Adaptation Grants. In Swedish].
18. Berg BL. Qualitative research methods for the social sciences. 5 ed. Boston:
Pearson; 2004.
19. Graneheim UH, Lundman B. Qualitative content analysis in nursing research:
concepts, procedures and measures to achieve trustworthiness. Nurse Educ Today.
2004;24:105-112.
20. Nygård L, Starkhammar S, Lilja M. The provision of stove times to individuals
with cognitive impairment. Scand J Occup Ther 2008;15:4-12.
21. Fänge A, Iwarsson S. Changes in accessibility and usability in housing: An
exploration of the housing adaptation process. Occup Ther Int 2005;12:44-59.
22. Sackett DL, Rosenberg WMC, Gray JAM, Haynes RB, Richardson WS.
Evidence based medicine: what it is and what it isn't: It's about integrating
individual clinical expertise and the best external evidence. BMJ 1996;312:71-72
23. Hammel KW, Carpenter C. Qualitative research in evidence-based
rehabilitation. London: Churchill Livingstone; 2004.

24. Kielhofner G, Hammel J. Documenting outcomes of occupational therapy: The center for outcomes research and education. *Am J Occup Ther* 2004;58:15-23.
25. Foto M. Outcome studies: The what, why, how and when. *Am J Occup Ther* 1996;50:87-88.
26. Fänge A, Risser R, Iwarsson S. Challenges in implementation of research methodology in community-based occupational therapy: the Housing Enabler example. *Scand J Occup Ther* 2007;14:54-62.
27. Zwarenstein M, Goldman J, Reeves S. Interprofessional collaboration: effects of practice based interventions on professional practice and health care outcomes (review). *The Cochrane Library*, 2009:3.

Table 1. Participant background data, N=1679, n (%)

Employer, n (%)	
Local authorities	1073 (66)
County councils	606 (34)
Year of graduation, n (%)	
Before 1996	1068 (64)
1996 or later	611 (36)
Academic degree, n (%)	
Bachelor's or university certificate degree	1639 (97)
Master's degree	40 (3)

Note: Background data were drawn from the FSA
member records and revised by the participant
when required

Table 2. Frequencies of responses to the survey questions, N= 1,679, %

Survey question	Response alternatives (%)			
	Never	Sometimes	Often	Always
1. How do you assess function, activity and participation?				
a) Home visit with structured interview/observation using checklist/instrument	43	35	14	8
b) Home visit not using structured interview/observation	10	13	37	40
c) Only by a phone call to the client	84	15	1	0
d) Only by proxy interview	67	31	1	1
2. How do you assess the home environment?				
a) Home visit with structured interview/observation using checklist/instrument	51	30	12	7
b) Home visit not using structured interview/observation	9	12	34	45
c) Only by a phone call to the client	88	11	1	0
d) Only by proxy interview	73	25	1	1
3. How do you follow-up/evaluate HA? ^{1, a}				
a) Home visit with structured interview/observation using checklist/instrument	72	20	6	2
b) Home visit not using structured interview/observation	7	41	42	10
c) Only by a phone call to the client	14	62	23	1
d) Only by proxy interview	21	72	7	0
4. What kind of information do you confide in your certificate?				
a) Diagnosis	19	32	18	31

b) Functional limitations	1	3	11	85
c) Activity and participation	1	7	22	70
d) Expecting changes	14	54	20	12
e) Environmental barriers	2	7	18	73
f) Social circumstances	11	36	24	29
g) Suggestions on HA	4	7	20	69
h) The wording “this is to certify that...” or an equal expression	17	11	19	53
5. In what way do you receive feedback on case progress?				
a) The client contacts me	19	69	11	1
b) Relative contacts me	20	75	5	0
c) Care staff contacts me	33	60	6	1
d) The workmen contacts me	57	39	4	0
e) The granting authority contacts me	21	37	20	22
f) Do not receive any feedback automatically	25	41	29	5

	Very good	Good	Neither good or bad	Rather bad	Very bad	Do not know
6. How do you regard the quality of the housing adaptation process?						
a) Referral	24	60	14	1	0	1

b) Identification of housing adaptation need	16	64	17	2	0	1
c) The assessment procedures	15	65	16	3	0	1
d) Formulate suggestions to suitable housing adaptations	17	63	16	2	0	2
e) Client participation	19	53	21	5	1	1
f) Certification	26	61	11	1	0	1
g) Application procedure	18	50	24	4	1	3
h) Obtain permit from the property owner	11	26	24	7	2	30
i) Cooperation with relatives	16	61	19	1	0	3
j) Cooperation with care staff	16	54	21	3	0	6
k) Cooperation with granting authority	38	42	12	5	1	2
l) Cooperation with workmen	15	31	27	5	3	19
m) Decision procedure	16	39	24	8	3	10
n) Case progress feedback	8	26	23	22	18	3
o) Follow-up/evaluation	8	47	29	10	4	2
p) The housing adaptation process as a whole (in general)	10	60	23	5	1	1

	Very important	Rather important	Neither important nor unimportant	Rather unimportant	Not important at all
7. With respect to housing adaptations, what do you consider as important to improve at your working place?					
a) Better structure of the entire process	20	40	29	8	3
b) Better assessment structure	23	43	24	8	3
c) Better follow-up/evaluation structure	29	47	17	5	2
d) More resources for own competence improvement	33	45	17	4	1
e) Increased information to care staff	12	42	35	8	3
f) Increased information to workmen	15	39	36	8	3
g) Increased information to granting authority	23	36	29	8	4
h) Increased information to the public	42	38	16	3	1
i) The organisation	14	26	44	11	5
j) Increased staff number	33	31	29	5	2
k) More research	30	40	24	3	2

Note. More than one answer was possible from each participant.

¹ n=1636. Due to the construction of the survey questionnaire the n=43 that answered that they never conducted any evaluation or follow-up were not able to respond to this question

^a At follow-up person and environment were not separated

Table 3. Differences between groups in their responses to survey question (mean rank and p-value), N=1,679

	Type of employer			Year of graduation		
	Mean Rank		p	Mean Rank		p
	Local	County		Before	1996 and	
	authority	council		1996	after	
1. How do you assess function, activity and participation?						
a) Home visit with structured interview/observation using checklist/instrument	824.16	868.05	0.057	849.37	823.63	0.263
b) Home visit not using structured interview/observation	840.49	839.13	0.953	830.19	857.15	0.243
c) Only by a phone call to the client	795.25	919.23	0.000	842.31	835.97	0.684
d) Only by proxy interview	816,59	881.46	0.001	841.10	838.07	0.880
2. How do you assess the home environment?						
a) Home visit with structured interview/observation using checklist/instrument	837.62	844.21	0.770	852.84	817.56	0.118
b) Home visit not using structured interview/observation	836.37	846.42	0.661	827.01	862.71	0.119
c) Only by a phone call to the client	811.49	890.48	0.000	844.09	832.86	0.417
d) Only by proxy interview	821.72	872.38	0.007	832.71	852.74	0.288
3. How do you follow-up/evaluate HA? ^{1, a}						
a) Home visit with structured interview/observation using checklist/instrument	809.52	834.13	0.198	840.92	778.96	0.001
b) Home visit not using structured interview/observation	833.79	791.89	0.062	843.74	773.99	0.002

c) Only by a phone call to the client	769.27	904.18	0.000	785.98	875.85	0.000
d) Only by proxy interview	822.37	811.77	0.580	801.24	848.93	0.013
4. What kind of information do you confide in your certificate?						
a) Diagnosis	828.36	860.62	0.173	817.43	879.46	0.009
b) Functional limitations	826.46	863.97	0.015	839.22	841.36	0.890
c) Activity and participation	827.80	861.61	0.088	818.82	877.02	0.003
d) Expecting changes	799.59	911.56	≤0.000	832.38	853.32	0.351
e) Environmental barriers	810.90	891.52	≤0.000	835.53	847.82	0.514
f) Social circumstances	779.03	947.96	≤0.000	843.90	833.18	0.648
g) Suggestions on HA	854.10	815.04	0.052	849.31	823.73	0.202
h) The wording “this is to certify that...” or an equal expression	850.89	820.72	0.180	835.59	847.71	0.590
5. In what way do you receive feedback on case progress?						
a) The client contacts me	794.33	920.87	≤0.000	858.84	807.07	0.009
b) Relative contacts me	809.73	893.61	≤0.000	863.62	798.72	≤0.000
c) Care staff contacts me	880.30	768.64	≤0.000	846.97	827.82	0.368
d) The workmen contacts me	875.64	776.90	≤0.000	874.89	779.01	≤0.000
e) The granting authority contacts me	817.59	879.67	0.009	850.01	822.51	0.244
f) Do not receive any feedback automatically	856.06	811.57	0.056	815.38	883.04	0.004

6. How do you regard the quality of the housing adaptation process?

a) Referral	883.59	762.82	≤0.000	822.74	870.17	0.028
b) Identification of housing adaptation need	871.79	783.72	≤0.000	831.17	855.44	0.247
c) The assessment procedures	864.97	795.79	0.001	823.39	869.03	0.029
d) Formulate suggestions to suitable housing adaptations	852.90	817.16	0.093	821.78	871.84	0.019
e) Client participation	890.23	751.05	≤0.000	826.23	864.07	0.092
f) Certification	868.17	790.13	≤0.000	824.87	866.45	0.052
g) Application procedure	857.74	808.59	0.031	818.70	877.24	0.010
h) Obtain permit from the property owner	822.41	871.15	0.041	832.66	852.84	0.397
i) Cooperation with relatives	867.43	791.44	≤0.000	804.26	902.47	≤0.000
j) Cooperation with care staff	799.66	911.42	≤0.000	816.34	881.35	0.004
k) Cooperation with granting authority	872.82	781.88	≤0.000	810.46	891.63	≤0.000
l) Cooperation with workmen	823.33	869.52	0.053	811.03	890.64	0.001
m) Decision procedure	852.60	817.70	0.140	791.45	924.86	0.005
n) Case progress feedback	833.38	851.72	0.446	808.04	895.86	≤0.000
o) Follow-up/evaluation	812.81	888.14	0.001	823.74	868.43	0.052
p) The housing adaptation process as a whole (in general)	858.27	807.64	0.019	808.36	895.30	≤0.000

7. With respect to housing adaptations, what do you consider as important to change at your working place?

a) Better structure of the entire process	810.35	892.50	≤0.000	871.33	785.24	≤0.000
b) Better assessment structure	822.10	871.69	0.033	873.75	781.01	≤0.000
c) Better follow-up/evaluation structure	850.70	821.06	0.197	861.26	802.83	0.011
d) More resources for own competence improvement	806.35	899.59	≤0.000	889.05	754.25	≤0.000
e) Increased information to care staff	824.15	868.06	0.057	882.98	764.88	≤0.000
f) Increased information to workmen	821.31	873.09	0.026	851.91	819.18	0.158
g) Increased information to granting authority	813.60	886.74	0.002	863.84	798.33	0.005
h) Increased information to the public	839.35	841.15	0.938	875.94	777.18	≤0.000
i) The organisation	798.43	913.61	≤0.000	883.39	764.16	≤0.000
j) Increased staff number	817.49	879.85	0.008	869.28	788.82	0.001
k) More research	844.23	832.51	0.615	849.14	824.02	0.280

Note. More than one answer was possible from each participant.

Note. Higher rank sum indicates more positive answers (eg. Always; Important; Very good). Lower rank sum indicates more negative answers (eg. Never; Not important; Very bad)

¹ n=1636. Due to the construction of the survey questionnaire the n=43 that answered that they never conducted any evaluation or follow-up were not able to respond to this question

^a At follow-up person and environment were not separated