

ORIGINAL REPORT

EXPLORING CHANGES OVER TIME IN HABILITATION PROFESSIONALS' PERCEPTIONS AND APPLICATIONS OF THE INTERNATIONAL CLASSIFICATION OF FUNCTIONING, DISABILITY AND HEALTH, VERSION FOR CHILDREN AND YOUTH (ICF-CY)

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**Objective:** This study explored how professionals in interdisciplinary teams perceived the implementation of the World Health Organization's International Classification of Functioning, Disability and Health, version for Children and Youth (ICF-CY) in Swedish habilitation services.

**Design:** Descriptive longitudinal mixed-methods design.

**Methods:** Following participation in a 2-day in-service training on the ICF-CY, 113 professionals from 14 interdisciplinary teams described their perceptions of the implementation of the ICF-CY at 3 consecutive time-points: during in-service training, after 1 year, and after 2.5 years.

**Results:** Implementation of the ICF-CY in daily work focused on assessment and habilitation planning and required adaptations of routines and materials. The ICF-CY was perceived as useful in supporting analyses and in communication about children's needs. Professionals also perceived it as contributing to new perspectives on problems and a sharpened focus on participation.

**Conclusion:** Professionals indicated that the ICF-CY enhanced their awareness of families' views of child participation, which corresponded to organizational goals for habilitation services. An implementation finding was a lack of tools fitting the comprehensive ICF-CY perspective. The study points to the need for ICF-CY-based assessment and intervention methods focusing on child participation.

**Key words:** adolescent; child; disability; classification; ICF-CY; implementation; habilitation; interdisciplinary.

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INTRODUCTION

The lack of a common language of child functioning and disability is a significant challenge in Swedish interdisciplinary

habilitation services offering interventions to children and youth with disability and their families (1). The publication of the World Health Organization (WHO)'s International Classification of Functioning, Disability and Health, version for Children and Youth (ICF-CY) in 2007 provides a means to achieve shared communication between professionals about children's functioning and disability. The classification focuses on participation in everyday life situations and provides a broad definition of disability (2). Implementation of the ICF-CY into services for children and youth with disabilities can be seen as the introduction of an innovation into daily work requiring the use of a new set of terms, behaviours and routines (3, 4). In the introduction of such an innovation it is useful to pose questions such as: Do professionals perceive the ICF-CY as a useful tool to assess child functioning and disability? Furthermore, do their perceptions of its utility change over time? Finally, does in-service training on the ICF-CY have an impact on how professionals view child participation?

*Habilitation services*

Swedish habilitation teams are interdisciplinary and include up to 10 different professions. The goal of habilitation services is to provide interventions that enhance child functioning based on assessment of the child's participation in life situations (2). During assessment and intervention planning, it is important to consider a child's functioning in different contexts (5, 6). Families should be involved to identify target problems and factors with a potential for enhanced participation (6–8). Collaboration with families is essential, since children and parents may have different concerns from those of professionals and may want to focus on other outcomes (9–13). Several studies have indicated that professionals tend to restrict their focus to profession-specific areas and that families have had a passive role in the intervention process (10, 14). If all assessment findings and information from different sources, including families, were linked to a common framework, it could provide a more comprehensive view of children's functioning through "a common language".

*ICF-CY*

The ICF-CY provides a comprehensive view of functioning and constitutes a universal language for interdisciplinary work with children. It offers a common framework to structure information on child functioning from medical, psychological, social, educational and environmental perspectives. Almost 1700 factors are organized under 4 interacting components (2). The component Activities and Participation covers the full range of life areas, from basic learning to composite areas, such as social tasks. Participation is the social perspective of functioning (15). The Environmental Factors component includes physical, social, and attitudinal factors. The Body Functions and Body Structures are parallel components covering all body systems, including the brain and its functions. The ICF-CY was field-tested in Swedish interdisciplinary services for children with comprehensive questionnaires (1). The field trials revealed that professionals saw the classification as complex, but with possible benefits for use in assessment through teamwork and collaborative problem-solving. Although professionals saw benefits in using the ICF-CY, they did not integrate it directly into their daily routines.

*Diffusion of innovation theory*

According to the diffusion of innovation theory (16), implementation is an innovation-decision process of diffusing new knowledge or tools into an organization. A critical point in implementation is to find a fit between the new ideas and the context (17). Since new routines must be perceived as useful without creating problems in daily work (1), the quality of an innovation can either stimulate or inhibit its use (4, 16). The innovation-decision requires considerable time during which professionals adopt the new ideas in a process of choices and actions. They pass through stages from being aware of the new ideas, forming their attitudes, processing the ideas, and finally adopting the innovation (4, 16–19). Individuals vary in their motivation to change routines. Professionals are willing to adopt new ideas if they perceive a need for change, and if the change helps them solve work-related problems (16–18). There is need for research on how professionals perceive the implementation of the ICF-CY in services for children and youth; how these perceptions change over time; and the rationale for use of the ICF-CY in daily work.

*Purpose*

This study investigated the implementation of the ICF-CY in Swedish habilitation services. Professionals' experiences

of applying the classification in daily work were explored by posing the following research questions:

- How do habilitation professionals use the ICF-CY over time following in-service training of the ICF-CY?
- How do habilitation professionals perceive the utility of the ICF-CY over time?
- How does the use of the ICF-CY correspond with the organizational service goals of child participation in their everyday life contexts?

**METHODS**

The study employed a descriptive-longitudinal-mixed-methods design using a qualitative approach to explore the diffusion of the ICF-CY among habilitation professionals. The study was approved by the ethics committee of the Faculty of Medicine at the University of Uppsala, Sweden (dnr 2005/221). Participants were provided in-service training on the ICF-CY by 3 researchers. Data were collected at 3 time-points (Fig. 1): *Time-point 0* (TP<sub>0</sub>) during in-service training when professionals were introduced to the classification; *Time-point 1* (TP<sub>1</sub>) 1 year after in-service training; and *Time-point 2* (TP<sub>2</sub>) 2.5 years after in-service training.

*Participants*

Professionals from habilitation services in 6 Swedish counties near Mälardalen University provided a sample of convenience. Six habilitation directors had expressed early interest in using the ICF-CY. In collaboration with the staff, each director selected 2 teams per county for ICF-CY in-service training. Two of the 6 directors selected 3 teams in order to cover ages 0–18 years. Fourteen of the possible 35 interdisciplinary habilitation teams were included with participation by all team members. The directors appointed 9 professionals as team contact persons between the researchers and the habilitation services. There were 138 women and 13 men, aged 24–65 years (mean 44.9, standard deviation (SD) 10.3 years) participating in the in-service training, representing 13 different professions (Table I). Most of the participants worked directly with children (135; 89%), others were administrators. Experience in the field of disability varied from 0 to 43 years (mean 14.7, SD 11 years). One year after in-service training (TP<sub>1</sub>), 113 professionals of the original group that were still employed in the habilitation services participated.

At 2.5 years after training, the 6 directors selected 16 professionals who had been especially involved in the implementation of the ICF-CY, to represent the participating teams at a follow-up conference. Eight representatives had served as team contacts during the project; the others had been responsible for implementation issues concerning the use of the ICF-CY. Twelve representatives worked directly with children, 4 were administrators. All representatives were women aged 30–66 years (mean 46.7, SD 11.3 years) with experience in the field of disability ranging from 4 to 40 years (mean 17.6, SD 12.3 years).

*Data collection*

Participant perceptions of the ICF-CY and its implementation were collected by means of a form, a questionnaire, and an open-ended

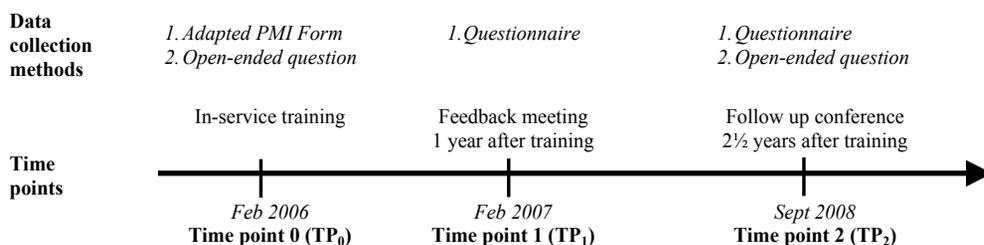


Fig. 1. Data collection methods at the 3 time-points. PMI: Plus, Minus, Interesting; TP: time-point.

Table I. Participants according to profession at the 3 time-points for data collection

| Time-points for data collection | Nurse | Occupational therapist | Physician | Psychologist | Physical therapist | Recreational counselling specialist | Special educator | Speech therapist | Social worker | Other professions* | Total number of participants |
|---------------------------------|-------|------------------------|-----------|--------------|--------------------|-------------------------------------|------------------|------------------|---------------|--------------------|------------------------------|
| TP <sub>0</sub>                 | 7     | 23                     | 1         | 18           | 26                 | 1                                   | 23               | 5                | 19            | 28                 | 151                          |
| TP <sub>1</sub>                 | 8     | 20                     | 0         | 11           | 23                 | 0                                   | 17               | 4                | 21            | 9                  | 113                          |
| TP <sub>2</sub>                 | 1     | 3                      | 0         | 2            | 5                  | 0                                   | 1                | 0                | 0             | 4                  | 16                           |

TP: time-point; \*other professions = administrators, child managers and assistants to physical therapist.

question in varying combinations at the 3 time-points (Fig. 1). Background information included gender, age, profession, position, and professional experience. Participants rated their knowledge about the ICF-CY on a 4-point scale, ranging from "0=no knowledge" to "3=use often in clinical work".

During in-service training, an Adapted PMI-Form was used. PMI is the abbreviation of Plus, Minus, and Interesting. The original PMI-Form was developed by De Bono as part of a lateral thinking concept for change of perceptions and included three open-ended questions: What are the good points?, What are the bad points?, and What is Interesting? (20, 21). The purpose of the 3 questions was to make experts reflect on a phenomenon from different perspectives. The Adapted PMI-Form contained additional space to write comments about the in-service training and overall opinions about the ICF-CY.

During in-service training and 2.5 years later (TP<sub>0</sub> and TP<sub>2</sub>), an open-ended question was put to the professional group: How can you use/have you used what you learned during the in-service training in your daily work? One year and 2.5 years after training (TP<sub>1</sub> and TP<sub>2</sub>), a questionnaire with 3 questions was used: (i) Did the in-service training generate new ideas? (ii) Have you used what you learned? (iii) Has the ICF-CY influenced your way of working with habilitation planning? Response alternatives were Yes or No, with an option to write comments.

#### Procedure

**Time-point 0.** Participating teams in each of the 6 counties attended a 2 day in-service training on the ICF-CY in February 2006 (22). The Adapted PMI-Form was distributed to participants at the beginning of day 1. They were reminded to make notes during the training and instructed to put the forms in a box before they left the training. Of the 151 participants, 96 delivered forms (64%). At the end of the training, participants also responded to the open-ended question in informal groups for 5–10 minutes. Their reflections were written on whiteboards and added to the data.

**Time-point 1.** During the year following the in-service training, all participants were encouraged to e-mail comments or questions about the ICF-CY to the researchers. The 9 team contacts attended 4 meetings at the university, providing them opportunities to discuss the ICF-CY and the fit between the ICF-CY theoretical framework and practice. These meetings also provided researchers opportunities to check interpretation of preliminary findings. Bi monthly e-newsletters were sent to all participants and their directors (22). The newsletters included information from the research group, frequently asked questions from the professionals, and examples of practical applications of the ICF-CY. One year after the in-service training, a feedback meeting was conducted for participating teams in each of the 6 counties. Two weeks prior to each meeting, questionnaires were distributed by e-mail (22). They were completed before the meeting and handed to the researchers with a return rate of 100%.

**Time-point 2.** At 2.5 years after in-service training at a 1 day follow-up conference, the 16 representatives responded to the questionnaire with a return rate of 100%. They also responded to the open-ended question about their use of the ICF-CY.

#### Data analysis

All collected statements were transcribed verbatim and organized in one Excel worksheet per time-point. Statements at each time-point were analysed separately.

**Qualitative analysis.** A combination of manifest and latent content analyses described by Graneheim & Lundman was used (23, 24). The analyses were interactive in accordance with Creswell (25; p.185). The unit of analysis was statements describing experiences of the ICF-CY in habilitation services. Included were statements on practical use of ICF-CY, its impact on daily work, and expectations for future use. Excluded were statements on in-service training, such as procedure and material, and general statements on the ICF-CY language, content, and qualifiers, or own professional situation. Composite statements included were divided into meaning units (23, 24).

The first researcher started by reading all statements in the unit of analysis several times before performing the 4 steps in the process of analyses (Fig. 2). A preliminary "codebook" (25) for each step was set up. It contained descriptions for statement inclusion and coding, such as definitions of the attitudes; names and definitions of content areas, categories and themes; and representative statements. The codebook evolved and changed during the study. Criteria, names and definitions were refined to make intentions clear.

The first researcher conducted the inclusion and coding of statements. Based on the codebook, a second researcher independently coded statements from 2 of the 6 counties. The 2 researchers discussed the coding after each step and made changes to the codebook, where after the first researcher recoded all statements for all 6 counties. The procedure was repeated for each time-point. When statements at all 3 time-points were analysed, a third researcher was consulted to judge the themes based on categories and statement examples. After agreement on final refinements, the first researcher once again analysed all the material.

In the first step of the process of analysis, Attitudes, a latent analysis preceded the manifest content analysis (23, 24). Each statement was evaluated as positive, neutral, or negative. A positive statement included phrases, such as "good", "come further", "supports wider perspectives", "we will revise our plans", or "interesting to try a new tool". A neutral statement included reflections, such as "could be useful for transferring information" or "we need to learn through theory and practical use in parallel". A negative statement included phrases, such as "bad", "worse", "time consuming", or "problem focused".

In the next 2 steps of the process, Content areas and Categories, manifest content analyses were used. Based on research questions, the statements were sorted to content areas, addressing the 2 main topics: (i) How the ICF-CY was used, i.e. applications, and (ii) How professionals perceived the utility of the ICF-CY, i.e. perceptions. In the next step, statements were categorized, emphasizing professionals' descriptions at the 3 time-points. Based on findings in earlier field trials (1), 2 categories were predetermined: Habilitation Process and Teamwork. Other categories emerged during the analyses.

Finally, a latent analysis was performed on the meaning of the data. Themes cutting across categories emerged. For each theme, statements encompassing similar meanings were clustered. The content in each cluster was related to a concept providing condensed meaning of the original statements (23, 24).

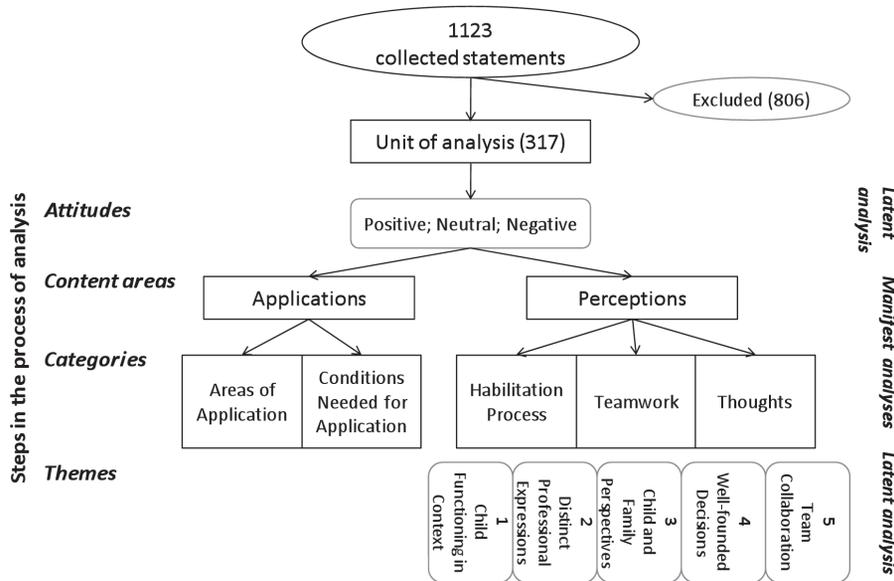


Fig. 2. The process of qualitative content analysis.

At Time-point 0, inter-coder agreement (25) was low. It was calculated as percentage of statements coded identically by the first and second researcher, in the steps of the process. The lowest agreement concerned Categories (46%) and Themes (54%). After discussions and redefinitions, it increased to satisfying levels. At Time-point 2, the lowest inter-coder agreement concerned Attitudes (67%) and the highest Themes (94%).

*Quantitative analysis.* Descriptive statistics (frequencies, percentages, and means) were used to illustrate background information and use of the ICF-CY. A paired samples *t*-test was used to analyse and compare knowledge of the ICF-CY at the beginning of the in-service training and 1 year after. A non-parametric test (Pearson  $\chi^2$ ) was used to investigate the nature of the statements and changes over time.

## RESULTS

Knowledge of the ICF-CY and use of the framework at the beginning of the training varied among participants, ranging from none to limited (mean 0.67 on the 4-point scale with 0=no knowledge, to 1=limited knowledge).

One year after the training, the knowledge of the ICF-CY and use of the framework among all participants had increased significantly ( $p < 0.05$ ). Physical and occupational therapists reported the largest increase in knowledge. One year after training, 72% of the 113 participants ( $n = 81$ ) reported that they were using what they had learned about the ICF-CY. There was a significant difference in the years of experience in the field of disability between “users” (17.5 years,  $SD = 10.7$ ) and “non-users” (14.6 years,  $SD = 9.3$ ).

Across the 3 time-points, 1123 statements were collected. Most statements (64%) were generated during in-service training, with 26% and 10% coming from TP<sub>1</sub> and TP<sub>2</sub>, respectively. Twenty-eight percent (317 statements) of all data from the 3 time-points were included in the analyses (TP<sub>0</sub> = 127; TP<sub>1</sub> = 114; TP<sub>2</sub> = 76 statements). Most of them reflected a positive or a neutral attitude toward the ICF-CY. Across all 3 time-points,

less than 3% of the statements were negative. Results specific to the 3 research questions are presented below. As the number of participants differed between time-points, analyses of statements are discussed in percentages, not numbers.

### *How habilitation service professionals use the ICF-CY over time following in-service training of the ICF-CY*

Responses related to the area *Applications* addressed the first main topic, that is how the ICF-CY was used and what the prerequisites were for use. This content area comprised a limited amount of all included statements (see Table II).

In the *Applications* content area, 2 categories of participant statements emerged (Table II). The category *Areas of Application* included statements related to individual services for children and families, such as assessment, habilitation planning, and evaluation. It also included examples of organizational use concerning information, such as referral, certification of need, and in-service training; documentation, such as search terms in patient records, and group evaluation; and materials, such as adaptation or development of existing materials, for example checklists, forms, or brochures.

The category *Conditions Needed for Application* included prerequisites for using the ICF-CY in daily work, such as time to learn about it and support in knowing how to use it. It encompassed expression of concerns, such as uncertainty about its possibilities or advantages in practice.

The distribution of statements in the *Applications* content area varied across time-points (Table II). During in-service training, more than half of the statements were about Conditions Needed for Application (52%). At the 2 later time-points, a majority of statements focused on the Areas of Application (75% and 93%, respectively). One year after training, statements in this category included concrete examples on how to use the framework for work on both individual and organizational level. At 2.5 years after training, they focused mostly on the organizational level

Table II. Distribution of statements (%) between the 2 content areas and among categories

| Content area  | TP <sub>0</sub> | TP <sub>1</sub> | TP <sub>2</sub> | Category                                  | TP <sub>0</sub> | TP <sub>1</sub> | TP <sub>2</sub> |
|---|-----------------|-----------------|-----------------|---|-----------------|-----------------|-----------------|
| APPLICATIONS<br>How the ICF-CY was used                                 | 28              | 11              | 20              | AREAS OF APPLICATION                      | 48              | 75              | 93              |
|   |                 |                 |                 | Individual Level                          | (20)            | (33)            | (20)            |
|   |                 |                 |                 | Work with children and families           |                 |                 |                 |
|   |                 |                 |                 | Organizational level                      | (28)            | (42)            | (73)            |
|   |                 |                 |                 | Information<br>Documentation<br>Materials |                 |                 |                 |
| PERCEPTIONS<br>How professionals perceived<br>the utility of the ICF-CY | 72              | 89              | 80              | CONDITIONS NEEDED FOR APPLICATION         | 52              | 25              | 7               |
|   |                 |                 |                 | Prerequisites<br>Concerns                 |                 |                 |                 |
|   |                 |                 |                 | HABILITATION PROCESSES                    | 55              | 53              | 61              |
|   |                 |                 |                 | Work and collaboration with clients       |                 |                 |                 |
|   |                 |                 |                 | TEAMWORK                                  | 26              | 12              | 23              |
| Work and collaboration with colleagues                                  |                 |                 |                 |   |                 |                 |                 |
| THOUGHTS  | 19              | 35              | 16              |   |                 |                 |                 |
| Reflections about the ICF-CY  |                 |                 |                 |   |                 |                 |                 |

ICF-CY: International Classification of Functioning, Disability and Health, version for Children and Youth; TP: time-point.

with statements related to information, documentation, and materials (28%; 42%; 73%). Table III presents sample statements in the Applications content area depicting the concrete use of the ICF-CY.

*How habilitation professionals perceive the utility of the ICF-CY over time*

Responses related to the area *Perceptions* addressed the second main topic, i.e. how professionals perceived the utility of the ICF-CY. This content area comprised the greatest number of all included statements (see Table II), most of them expressing a positive attitude (TP<sub>0</sub> = 75%; TP<sub>1</sub> = 66%; TP<sub>2</sub> = 56%).

In the *Perceptions* content area, 3 categories of statements emerged (Table II). The most comprehensive category *Ha-*

*ilitation Process* included participants' views of work and collaboration with clients (children, their families, service providers, or other networks). Views of work and collaboration with colleagues were part of the category *Teamwork*. The third category, *Thoughts*, included the way participants reflected about the ICF-CY. The percentage of statements focusing on *Thoughts* was highest 1 year after training (35%).

In the final latent content analyses of the *Perceptions* content area, 5 themes emerged, each one with 3 concepts providing the condensed meanings of the original statements (Table IV). Theme 1, *Child Functioning in Context*, included the concepts: Varied perspectives on functioning and disability, Effect of environment, and Importance of participation. Theme 2, *Distinct Professional Expressions*, included the concepts: Com-

Table III. Representative statements in the content area "Applications". (Translated from Swedish by the first author)

| Category                          | In-service training<br>(TP <sub>0</sub> ) | 1 year after training<br>(TP <sub>1</sub> )   | 2.5 years after training<br>(TP <sub>2</sub> )  |
|-----------------------------------|---|---|---|
| Areas of application              | Work with children and families           | Checklist for assessment<br>Revision of habilitation planning<br>Intervention evaluation  | We get some assignments that are formulated according to the ICF-CY   |
|                                   | Information                               | Structure for information to primary healthcare   | The team has made use of the ICF-CY for assessment and writing goals for "our" children   |
|                                   | Documentation                             | Search words in patient records   | We have developed our habilitation planning   |
|                                   | Materials                                 | Revision of assessment forms  | We are working on a modified inventory form for parents and adolescents   |
| Conditions needed for application | Prerequisites                             | Time-consuming<br>We need continued support in daily work                                 | Performed a study group aimed to implement the ICF-CY framework in our daily work   |
|                                   | Concerns                                  | Theoretically complicated, but useful<br>Interesting, but is it manageable in daily work? | Using profession-specific and common templates for documentation. Trying to find consistent search terms<br>A task force has developed 2 brochures to facilitate the identification of needs (1 for parents and 1 for youth)<br>(No statements given) |
|                                   |   | (No statements given)   | Concerns that the current documentation templates are not linked to ICF-CY terms  |

ICF-CY: International Classification of Functioning, Disability and Health, version for Children and Youth; TP: time-point.

Table IV. Distribution of responses (%) among Themes in the content area Perceptions

| Themes   | TP <sub>0</sub> | TP <sub>1</sub> | TP <sub>2</sub> |
|--|-----------------|-----------------|-----------------|
| 1. Child functioning in context<br>Varied perspectives on functioning and disability<br>Effect of environment<br>Importance of participation                             | 24              | 34              | 28              |
| 2. Distinct professional expressions<br>Common language<br>Clear goal and problem formulations<br>Structure and links  | 23              | 29              | 23              |
| 3. Child and family perspectives<br>Child involvement in the habilitation process<br>Children's views of participation<br>Parent involvement in the habilitation process | 7               | 19              | 13              |
| 4. Well-founded decisions<br>Comprehensive assessment<br>Careful habilitation planning<br>Appropriate interventions  | 23              | 12              | 26              |
| 5. Team collaboration<br>Common focus<br>Exchange of professional knowledge<br>Effectiveness   | 23              | 6               | 10              |

mon language, Distinct goal and problem formulations, and Structure and links. This theme reflected views of the ICF-CY as a supportive framework for professionals to think, speak, and write in an exact and comprehensible manner. Theme 3, *Child and Family Perspectives*, included the concepts: Child involvement in the habilitation process, Children's views of participation, and Parent involvement in the habilitation process. This theme also reflected perceptions of families as partners. The percentage of statements in these 3 themes was

highest one year after training (TP<sub>1</sub>) compared with the other points of time (Table IV).

Theme 4, *Well-founded Decisions*, included the concepts: Comprehensive assessment, Careful habilitation planning, and Appropriate interventions. This theme reflected views of the ICF-CY as a support for problem-solving and decision-making. Theme 5, *Team Collaboration*, included the concepts: Common focus, Exchange of professional knowledge, and Effectiveness. The theme reflected the internal team process. Table V presents sample statements in the Perceptions content area depicting participants' perceptions of the use of the ICF-CY.

*How the use of the ICF-CY corresponds with organizational service goals of child participation*

Child participation was embedded in the 2 themes Child Functioning in Context and Child and Family Perspectives, focusing on children's functioning in everyday life situations and their active involvement in the habilitation process. The combined percentage of statements related to these 2 themes had increased at Time-point 2 compared with Time-point 0 and was highest at Time-point 1 (TP<sub>0</sub> = 31%; TP<sub>1</sub> = 53%; TP<sub>2</sub> = 41%). The  $\chi^2$  test showed significant differences between the observed and expected frequencies of statements at the 3 time-points ( $\chi^2 = 9.740$ ;  $df = 2$ ;  $p = 0.01$ ).

DISCUSSION

This study investigated implementation of the ICF-CY in Swedish habilitation services by exploring professionals' experiences of applying the classification in their daily work. The implementation seemed to be a selective process in which

Table V. Representative statements in the "Perceptions" content area. (Translated from Swedish by the first author)

|  | In-service training (TP <sub>0</sub> )   | 1 year after training (TP <sub>1</sub> )   | 2.5 years after training (TP <sub>2</sub> )  |
|--|--|--|--|
| Theme 1: Child functioning in context      | ICF-CY might be helpful to see functioning instead of starting from diagnosis and making over-generalizations                                      | I think of disability in a new way   | We are in the pipeline to get a broader perspective on "our" children  |
| Theme 2: Distinct professional expressions | To think in a more structured way, and hopefully create a more focused habilitation plan   | Referrals based on the ICF-CY make the problems easier to understand   | Easier to explain child functioning assessment, and easier to motivate why interventions on body level are needed in order to change functions on the activity/participation level |
| Theme 3: Child and family perspectives     | The child will come in focus   | A way to talk with the child about goals. "What kind of activities do you want to do?" instead of "What do you like us to intervene with?" | It is a way of thinking that helps me asking questions so children/parents will reflect themselves   |
| Theme 4: Well-founded decisions            | Maybe the different areas will make it easier to prioritize interventions  | To distinguish what is most important  | We make better habilitation plans. I also think we are less focused on interventions. We see other things and have improved the assessment   |
| Theme 5: Team collaboration                | I look forward to structured materials leading to a more "unified" team, in the long run saving both time and energy, as well as improving clarity | Impact on team discussions – consensus, common base. Affects my thinking for each case   | I think the impact differs among individuals and professions. However, I think our understanding has increased and our work is more goal-directed                                  |

ICF-CY: International Classification of Functioning, Disability and Health, version for Children and Youth; TP: time-point.

participants reported that the ICF-CY was primarily used for practical work, such as habilitation planning, including problem-solving and decision-making, all important parts of the habilitation process. Application of the ICF-CY required development of new routines and adaptations of materials. Participants perceived that their use of the ICF-CY framework expanded their perspectives and supported analyses and communication of children's needs. The use of the ICF-CY appeared to enhance a focus on child participation, corresponding with the overall organizational goal for habilitation.

A number of findings emerged from the results of this study. First, implementation of the ICF-CY into habilitation services takes time and effort (22). As described by the diffusion of innovation theory, a change of routines requires time under which professionals communicate the new ideas and decide on adoption or rejection (16, 17). There were indications that the innovation-decision process was going on for the entire 2.5-year period of this study. For the ICF-CY to be used, a good deal of effort went into adapting materials, patient records, and strategies for habilitation planning and knowledge transfer. It appears that when professionals attempt to apply the ICF-CY to daily work, they realize shortcomings in the organization and the need to revise routines to fit the innovation represented by the ICF-CY. To direct the process and conduct an effective implementation of the ICF-CY into an organization, a systematic approach is required (3). A well-planned process with preparation of materials, such as checklists for assessment or information folders, and a determined change to ICF-CY based search terms will probably help to accelerate the process.

Another finding concerned how professional perceptions on the utility of the ICF-CY changed under the innovation-decision process. When receiving training and becoming aware of the classification, participants saw benefits for daily work, but also realized that such work required effort. One year later, they frequently noted how the ICF-CY had widened their theoretical perspectives on child functioning. At that point, however, they did not appear to have experienced utility in practice. Not until the last time-point, participant statements focused on use of the ICF-CY in daily work. They seemed to remain for a long time at the diffusion of innovation theory stages persuasion and decision (16) before they decided on implementation. It might indicate that during the innovation-decision process, professionals kept the classification in mind but struggled with integrating new terms in for example problem-solving and habilitation planning. To advance an ICF-CY implementation, it is certainly as Grol et al. (3) conclude "important to deploy people who have experience of the new practice, so as to show how they apply it, what experience they have with it and what results they have achieved with it so far" (p. 67).

Sustainability of the ICF-CY in habilitation services seems probable since participants' overall positive experiences of the ICF-CY gave evidence for the classification as a high-quality innovation (4, 16). Some of the key attributes, identified by Greenhalgh et al. (4) as stimulating adoption of innovations, were established during the 2.5-year implementation process (4, 16). The attribute *Relative advantage* was recognized by participants commenting on the ICF-CY as a model supporting the habilita-

tion process and improving problem-solving. Participants also described how the ICF-CY facilitated problem explanations and goal setting, impacted the content in habilitation plans (22), and made them more readable and easy to understand. Their experiences of the ICF-CY as a helpful framework to link information from different sources corresponded with the findings of other studies (26, 27). The ICF-CY seemed to contribute to varied perspectives on child functioning, to focus on children within their living context, and to new thoughts concerning children's needs and the concept of disability. In addition, participants commented on the contribution of the ICF-CY making meetings with families more equal in terms of information exchange. They described how they listened more actively to parents and asked other questions, reflecting their awareness of the importance of evaluating child functioning across the whole life situation. They also commented on how the ICF-CY made their expressions more clear and supported communication with both families and colleagues. This might facilitate negotiations and agreements with families (28, 29). Seeing children and their parents as important co-workers in the intervention planning, increases the probability that child-relevant outcomes are identified by professionals in the intervention process (7, 9). Based on concrete comments like these, the ICF-CY looks agreeable with habilitation values, also establishing the third key attribute *Compatibility*. As for rehabilitation settings (30), the ICF-CY might improve the quality of the habilitation processes and contribute to a more systematic approach to intervention by the professionals.

For professionals to decide on implementation of the ICF-CY, they need opportunities to try to modify it to their own situation. These requirements are highlighted as preconditions for stimulating innovations by the key attributes *Trialability* and *Reinvention* (4, 16). This study showed how participants initiated and performed modifications to enable use of the ICF-CY in daily work. Although participant involvement is important for effective implementation of an innovation (3), a need for many unplanned adaptations might be barriers by taking time and effort. As implementations are stimulated by quickly accomplished results (key attribute *Observability*) (3), the support by a leader, familiar with the ICF-CY and its practical use, might have facilitated the process.

Another barrier to implementing the ICF-CY may be its *Complexity*, which is the last key attribute (4, 16). The rationale for this is participants' comments on time-consumption and difficulties in learning how to use the ICF-CY. Since these statements decreased over time, it appeared that using the classification in daily work increased the chances for professionals to discover benefits. However, the complexity may keep professionals from starting to use the classification if not required, indicating a need for simplification (3, 4). To make the classification applicable to clinical practice, ICF core sets (i.e. limited sets of categories) have been established for assessment of adults with various conditions (31, 32). Widespread use of the ICF-CY in habilitation services may require the development of assessment tools and core sets for assessment of children as a means to decrease complexity.

For a future implementation of the ICF-CY in habilitation practices, it is important to consider professionals' varying

motivation to change their routines. Social networks influence the adoption of new ideas, but so do leaders encouraging colleagues to break out of convergent thinking and routines (4, 16, 33). Diffusion of innovation theory distinguishes leaders as *innovators*, a few individuals liking new ideas, and *early adopters*, an important and active group with a high degree of motivation. In addition, a professional group usually includes people willing to let the early adopters lead their way, but also professionals sceptical about or totally against changes. In this study, as in a few others, professionals with the longest experience in the field of disability tended to adopt the ICF-CY first (22, 33). Since experienced professionals often constitute the core group to affect change, their attitudes are important (34). Other early adopters seemed to be occupational and physical therapists since they increased their knowledge on the classification more than other professional categories. Findings in this study may assist directors deciding to introduce the ICF-CY in service settings. For planning the implementation and guiding colleagues through the innovation-decision process, a task force should consist of experienced professionals.

An important finding concerned professionals' focus on child functioning in everyday life. The result suggests that use of the ICF-CY makes professionals more aware of different perspectives of disability and child functioning in everyday life. It may also enhance their focus on child participation when using the ICF-CY for assessment and habilitation planning (22). The focus on participation corresponds with the overall goal of Swedish habilitation services and is important both for outcomes and for professionals' way of working. The ICF-CY probably encouraged professionals to change from a deductive to an inductive problem-solving process, asking for families' experiences and desires to a higher degree and including them as experts. Since professionals working in habilitation services become experts in the field, they risk delimiting problems for interventions by using earlier experiences (19) and thereby failing to generate new and flexible solutions for each child. It is a good possibility that the ICF-CY is a framework, to which information from different sources will be linked, providing a more comprehensive view of children's functioning than a view restricted to profession-specific areas. Besides, this study showed that families got an active role in the intervention process.

In this study, limitations included the various data collection methods and the discrepancy in number of respondents at the 3 time-points, complicating data comparisons. Besides, statements collected during the training expressed expectations for future use of the classification, not experiences of current use, and changes over time might be affected by the participants' initial very limited knowledge on the ICF-CY. However, the study findings and the interpretation of professional statements tend to support the diffusion of innovation theory. To verify interpretation, member checks were conducted by discussing preliminary findings with team contacts and by inviting participants to comment on reported findings. For example, a summary of the Adapted PMI-Forms was presented and discussed at a meeting with the team contacts 1 month after in-service training; at the 6 feedback meetings, participants were asked if their statements from the in-service training were correctly

understood; and at the final follow-up conference, findings from the first 2 time-points were presented. When planning the study, bias was prevented by including participants from several independent organizations and with various careers, ages, and experiences. Reliable coding was strived for by repeating analyses and refining the codebook after each step in the analysis process. Categories and themes, constructed by 2 researchers, covered all collected statements and were reviewed by a third researcher to enhance trustworthiness. The study can be seen as a pilot for future research on the utility of the ICF-CY in services for children and youth with disabilities. In these studies, results should be controlled by using comparable sample sizes and consistent methods at each data collection. In future research, children's and parent's views of the use of the ICF-CY should be added.

In conclusion, the use of the ICF-CY can provide a common framework for professionals in habilitation services for children and youth. Findings indicated enhanced awareness of child participation and children's and families' views of child functioning in everyday life, a focus corresponding with the organizational goal for habilitation services. Applications in daily work primarily concerned assessment and habilitation planning. Utility was perceived after 1 year, but concrete applications required more time. To be able to apply the ICF-CY, professionals noted that some routines and materials had to be adapted. This finding indicates a need for proper tools to fit the comprehensive scope of the ICF-CY on functioning and disability. Further research could examine if the use of ICF-CY in habilitation services increases child participation in everyday life. Methods and resources are needed to support professionals in focusing on participation-related interventions. In addition, core sets for assessment of participation in specific life situations and other simplifications are required to reduce the complexity of the ICF-CY; by doing so, the chance of more widespread usage of the ICF-CY is increased.

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