ORIGINAL REPORT

EVALUATION OF IN-SERVICE TRAINING IN USING THE ICF AND ICF VERSION FOR CHILDREN AND YOUTH

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Objective: To study the effects of in-service training on staff's self-reported knowledge, understanding and use of the International Classification of Functioning, Disability and Health (ICF) and ICF Children and Youth version (ICF-CY).

Design: Quasi-experimental with a questionnaire prior to training and another one year after training.

Methods: Intervention was in-service training in using the ICF and ICF-CY. Subjects were 113 professionals working in habilitation services. Two subgroups were compared: (*i*) subjects who reported one year after the training that they had used the ICF and ICF-CY in daily practice; and (*ii*) subjects who had not used these frameworks.

Results: The gender, age, and years of work experience of the members in the subgroups were similar. The professionals who used what they learnt from the training, and who already had knowledge about and a positive attitude to the ICF/ICF-CY prior to the training, were found to benefit most from the training. They also increased their ability to apply it to statements about everyday work. These professionals should focus on increasing their understanding and use of the ICF/ICF-CY in their everyday work and in assessment, while those who have limited prior knowledge of the ICF/ICF-CY should focus on gaining knowledge and understanding the purpose, terms and components of the framework.

Conclusion: It is recommended that in-service training in using the ICF and ICF-CY is tailored to different groups of professionals depending on their degree of knowledge of the ICF/ICF-CY.

Key words: adolescent, child, classification, health, rehabilitation, staff development.

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INTRODUCTION

The International Classification of Functioning, Disability and Health (ICF) is the World Health Organization's (WHO's) language and framework for describing functioning, disability and health at both individual and population levels (1). Its potential has been acknowledged (1–7), and in 2007 a version for children and youth (ICF-CY) was published (8). Professionals require training to use the framework in clinical settings. The expected outcome of training is increased interest in, and knowledge of, the framework among clinicians, and that they apply it in their everyday work. Interest in the framework increases when professionals perceive that its application will support the methods they already know and use. There are some empirical studies evaluating training models for the knowledge and use of the ICF model (9–11). These evaluations indicate that training changes attitudes, increases knowledge about the framework and increases coding skills. However, they do not report on whether participants perceive that training affects methods of working in clinical practice. This article reports on an evaluation of the effects of an in-service training on participants' self-reported knowledge, understanding and use of the ICF and ICF-CY.

In order to be adopted for clinical use a framework such as the ICF/ICF-CY must be consistent with existing values, easy to understand, learn, use, and to obtain results from. Professionals' prior knowledge of the framework also has to be taken into account (12, 13). Some people may already be familiar with the ICF/ICF-CY and may see the value of it, while others may be sceptical, or do not know about it. Since the ways in which people learn and their willingness to learn seem to depend on their experience of the subject in focus, achievement after training needs to be investigated in relation to previous experiences of, and attitudes to, the ICF/ICF-CY (12, 14). To ensure that professionals use the framework they must have a basic knowledge of it and understand how to apply it in their everyday work (15–19).

The ICF and ICF-CY were developed to serve as a common language to report, survey, and perform research about health and disability. They are the most widely known call for a standardized and universal definition of disability (20), in which function is seen as the interaction of a person with a health condition with the physical, social and psychological environment (1). The framework assumes that disability is a natural and common experience of living, and does not necessarily equate to illness (1). There has been a radical

shift in the ICF compared with the previous WHO International Classification of Impairment Disabilities, and Handicap (ICIDH), published in 1980. The ICIDH emphasized individual's disabilities, whereas the ICF focuses on individual's level of health. The ICF structure comprises the following 4 components: Body function and body structures; Activities/participation; Environmental factors; and Personal factors. There are 5–9 chapters (domains) in each component, which allow for description of an individual's function and health within hierarchal structures, from less to more detailed levels of descriptions (1, 16). Personal factors are not coded in the ICF because of their variability among cultures (1).

Concerning the use of the ICF/ICF-CY in everyday work, observing the application of the framework by others increases potential users' interest. Applications can concern viewing health as a multi-dimensional phenomenon (21), sorting information in patient records (22), habilitation plans and in team conferences (23) according to the ICF components and linking rules (24, 25). Problems with the ICF/ICF-CY in terms of application include its complexity and, in Sweden, the fact that even though employers in habilitation services endorse the use of the ICF, the services' report systems for patient records and routines in team conferences have not yet been fully developed to support its use in daily work (1, 23). However, interest in the framework increased when the WHO conducted field trials in Sweden (26) and published the ICF-CY (8). The content of the ICF-CY is expanded to cover essential aspects of functioning and environment in childhood. During training it is also important for professionals to apply their new knowledge and skills in everyday work in a manner that facilitates adoption of the framework on a permanent basis. After adopting the use of the ICF and ICF-CY following in-service training, individuals need organized follow-up activities, since uncertainty may still exist (12).

Professionals involved in habilitation services in Sweden undergo pre-service training in performing their work tasks, and also receive in-service training. Research on in-service training and intervention diffusion (12–15) shows that new ways of working are more easily adopted if the content and form of training relate to the current ways of working. Earlier studies on training in the use of the ICF/ICF-CY (9–11) have primarily measured the effect of training on attitudes to the ICF, theoretical knowledge about the ICF, and coding skills outside the clinical everyday situation. Outcome evaluations have been performed directly after training. The overall aim of this study was to evaluate the effects of an in-service training in using the ICF and ICF-CY on professionals' self-reported knowledge, understanding and use of what they have learnt in everyday work. The specific aim was to describe changes one year after training in these measures in 2 subgroups of professionals in child and youth habilitation service; one subgroup who after the in-service training reported they had used the ICF and ICF-CY in daily practice and one subgroup who reported they had not. The study aimed to answer the following questions: (*i*) What changes are seen in knowledge about the ICF and ICF-CY, and understanding of the purpose, terms and components of the framework? (*ii*) What changes are seen in use of the components in assessment? (*iii*) What differences are seen between the 2 subgroups?

METHODS

A quasi-experimental study design was used. The intervention was an in-service training in using the ICF and ICF-CY for a group of professionals working in habilitation services. Data were collected by one questionnaire prior to the training and another one year after the training. The study was approved by the ethics committee of the Faculty of Medicine at University of Uppsala (Dnr 2005/221).

Participants

A total of 113 professionals working in 14 teams in habilitation services in 6 counties in Sweden participated in the study. They represented professions such as manager, nurse, occupational therapist, pedagogue/special educator, physiotherapist, psychologist, social worker, speech therapist, including both practitioners and administrators. They were a sample of convenience, chosen by the employer at each habilitation services. Criteria for inclusion were that all professionals in a team had agreed to participate after their employer had informed them about the project. The requirements of the study were that they should participate in a 2-h information meeting, a 2-day in-service training, and complete 2 questionnaires. A total of 164 participants answered questionnaire 1 (Q1) at a 2-h information meeting. The number of participants in the 2-day training was 151; the remainder were ill or on leave. A total of 113 participants answered questionnaire 2 (Q2) one year later; the remainder had left their positions during the year, either permanently or temporary. In questionnaire 2 the participants reported whether they had used what they had learnt in the in-service training. Based on this information "All professionals" (*n*=113) were divided into the subgroups "Attended" (*n*=32), and "Attended and Used" (*n*=81). Table I gives an overview of the participants' characteristics, based on background information gathered prior to the in-service training.

Intervention

The training was developed from the content of the ICF-DIN (Disability Italian Network) basic and advanced courses (9), which the Disability Italian Network developed in collaboration with the WHO. The first 3 authors were examined in both courses as part of the European project Measuring Health and Disability in Europe (MHADIE) (27). The content was arranged with regard to the participants being adult learners and that all learning and skills should be transferred to daily work situations. Since experience of the ICF and ICF-CY vary (9, 23), a pilot training course of the planned in-service training was tested on professionals in habilitation services. Prior knowledge and interest in the ICF varied from "I do not want to classify people" to "We already use it". Positive and negative comments expressed during the course were used to revise the in-service training to further encourage understanding and use of the framework. Participants appreciated the clear presentations of the ICF structure, purpose and terms, the relevance of the practical training to the professionals' role in their workplace, the extent to which applications by others were presented, and the time for reflection on their own progress during the training. The planned in-service training was expanded to 2 full days, with more time for testing participant's understanding and use of the framework, and more time for discussion of its advantages and disadvantages. It was also preceded by a 2-h information meeting with a home assignment and followed by bi-monthly newsletters. An outline structure of the training is shown in Table II.

The 2-h information meeting was held 2 months prior to the 2-day in-service training. The ICF and ICF-CY were presented briefly, together with the home assignment, which the participants were requested to complete prior to the 2-day training. The home assignment was to analyse a habilitation plan collaboratively in the team, and link information in the plan to differential components in the ICF-CY draft version; i.e. Activities/participation, Environmental factors, Body functions, or Body structures. To support the participants in completing the home assignment, an ICF-CY Overview was constructed, in which the components were summarized in 4 tables, one for each component, a total of 4 pages. Through carrying out the

Table I. *Overview of professionals' characteristics prior to in-service training in using the International Classification of Functioning, Disability and Health (ICF)/ICF Children and Youth version (ICF-CY), in all professionals, their prior knowledge about ICF, and in professionals divided into the subgroups "Attended" and "Attended and Used"*

Professionals' background	All professionals $n=113$	Prior knowledge about ICF Mean (SD)	Subgroups "Attended" $n=32$	"Attended and Used" $n=81$
Gender, male/female, *n*	7/106	–	3/29	4/77
Age, years, mean (SD)	46.0 (9.41)	–	45.2 (8.71)	46.3 (9.71)
Profession, *n* (% of subgroup)				
Manager	9	0.89 (0.33)	5 (15.6)	4 (4.9)
Nurse	8	0.75 (0.46)	2 (6.3)	6 (7.4)
Occupational therapist	20	1.26 (0.45)	2 (6.2)	18 (22.2)
Physiotherapist	23	1.30 (0.64)	5 (15.6)	18 (22.2)
Psychologist	11	0.73 (0.47)	6 (18.8)	5 (6.2)
Pedagogue/special educator	17	0.82 (0.40)	5 (15.6)	12 (14.8)
Social worker	21	1.10 (0.44)	7 (21.9)	14 (17.3)
Speech therapist	4	0.75 (0.50)	0 (0.0)	4 (4.9)
Role/position, *n* (% of subgroup)				
Practitioner	89	–	27 (84.4)	62 (76.5)
Practitioner/administrator	12	–	2 (6.3)	10 (12.3)
Administrator	12	–	3 (9.3)	9 (11.2)
Years of work experience, mean (SD)				
Total	15.5 (11.95)	–	14.4 (10.0)	15.9 (10.69)
Years with children	13.7 (10.38)	–	13.6 (9.57)	13.8 (10.76)
Years with adults	7.0 (8.10)	–	3.2 (3.43)	8.6 (8.85)

SD: standard deviation.

home assignment the participants were already acquainted with the ICF structure and language of the ICF/ICF-CY on the first day of the in-service training, and had discussed and applied the ICF-CY in a habilitation plan of their own.

The 2-day training in using the ICF and ICF-CY for participating teams lasted a total of 12 h (6 h per day) and comprised 8 short lectures mixed with 5 practical training sessions during the days. The

Table II. *Overview of in-service training in using the International Classification of Functioning, Disability and Health (ICF)/ICF Children and Youth version (ICF-CY), consisting of a 2-h information meeting, 2-day training with a mix of short lectures (1–8) and practical training sessions (I–V), followed by bi-monthly newsletters*

In-service training in using ICF/ICF-CY
Two-hour information meeting two months prior to two-day training
Home assignment
ICF-CY Overview
Day 1 (6 h)
1. Introduction
2. ICF history
I. Home assignment – habilitation plan
3. To read ICF
II. To code habilitation plan according to ICF
4. Development of ICF-CY
5. Development of ICF-CY Form 1 to 3
III. ICF-CY Form 1 – Activities/Participation
Day 2 (6 h)
6. Applications of ICF and instruments linked to ICF
7. Problem-solving model combined with ICF
IV. ICF-CY Form 2 – Environmental factors
8. Habilitation plan
V. ICF-CY Form 3 – Body functions
Bi-monthly Newsletters 1–10
Frequently asked questions
Practical examples of application of ICF and ICF-CY

practical training was performed as group-assignment or role-play, with reflection and discussion. During the in-service training the ICF structure and language was constantly presented in relation to assessment, goal-setting, and intervention, following the steps in a problem-solving model. The in-service training repeatedly allowed time for the participants to reflect upon application of the framework in their own daily practice. Day 1 of the in-service training was designed to ensure that participants knew what the ICF and ICF-CY were, could find their way around the structure of components, chapters and codes, and used the language and terms during discussions. Day 2 was designed to ensure that participants had examples of the application of the ICF and ICF-CY.

A new tool, the ICF-CY Assessment Form 1 to 3, was developed specifically for the in-service training in order to facilitate the adoption of the ICF-CY in practice. The forms are based on the categories in the ICF-CY draft version, on the ICF-CY questionnaires developed by the WHO International Task Force on Children and Youth, and on experiences from the ICF-CY field trials in Sweden (26). The 3 ICF-CY forms have not been officially approved by WHO. In the in-service training the forms were described, as well as their purpose to assess, set goals, prioritize, and to plan intervention. The ICF-CY Form 1 to 3 can be used by all professionals in a team, and also by the family and child. ICF-CY Form 1 comprises 52 questions on Activities and Participation, representing the aspects of this component. Form 2 comprises 28 questions on Environmental factors, and Form 3 comprises 44 questions on Body functions, and 10 on Body structures. First the questions appropriate for description of the child's present difficulties in functioning are depicted. Each difficulty (ICF-CY category) is then judged on a 4-point scale of how severe the difficulty is, and finally the answers in each form are summarized as areas the child can, and wants to, develop.

The bi-monthly newsletter was sent 10 times. The purpose of the newsletters was to encourage all professionals to use the ICF-CY framework in their daily work. A newsletter never exceeded 2 pages, and covered different aspects of the framework. Important features of the newsletter were the frequently asked questions about the ICF and ICF-CY from the professionals, the answers to these questions, and new examples of the practical application of the ICF and ICF-CY. Examples were drawn either from scientific articles or from the professional's own practice.

Data collection methods

When data collection began there were no published assessment forms on ICF-related knowledge, understanding or use. The first 3 authors therefore developed a questionnaire based on assessing the learning according to Bloom's taxonomy, focusing on participants' ability to describe, explain and apply issues related to the ICF framework (28). Two similar questionnaires were used, the first was answered 2 months prior to the 2-day in-service training, and the second was answered one year after the training.

Questionnaire 1 (Q1) comprised 4 sections (Table III). In Section I participants answered questions about their background, such as gender, age, profession, position, number of years working with children and with adults. They also rated their knowledge about the ICF and ICF-CY on a 4-point scale, ranging from "0 = none" to "3 = use often in clinical work". In section II there were 12 statements about perceived ability to explain purpose and terms in the ICF, e.g. "It is easy to explain what is *classified in ICF*" or "It is easy to explain the term *environmental factors* as it is defined in ICF". The participants rated each statement on a 5-point scale ranging from "0 = not easy at all" to "4 = very easy". In section III there were 15 statements referring to different ICF-components. There were 3 statements each on body function, body structure, activities, participation, and environmental factors, presented in a random order, e.g. "It is easy to say what ICF-component *The wheelchair is too small* refers to" or "It is easy to say what ICF-component *He really wants to go to cinema with his friends* refers to". The participants rated the statements on a 5-point scale, ranging from "0 = not easy at all" to "4 = very easy" to refer to a component. In section IV there were 9 statements related to different ICF-components, 2 statements for each of body function, activities, participation, environmental factors, and one statement for body structure. The participants answered how often the statement (component) was used in assessment, e.g. "Has the assessment concerned *activities at home or in school that the children have interest in doing*". The participant rated the statement on a 5-point scale ranging from "0 = not often at all" to "4 = very often". In questionnaire 2 (Q2) sections II, III and IV were the same as in Q1. In section I two questions were added on whether the professionals had participated in the 2-day training, and whether they had used the training from the 2 days in their clinical work. The participants answered yes or no, and could comment on their answers.

Procedure

Q1 was distributed to the participants in person when they attended the 2-h information meeting 2 months prior to the 2-day training. The information meeting took place in each of the 6 counties, and the participants in each team filled in the questionnaire at the beginning of the information meeting and handed it back as soon as they had completed it. Before filling in Q1 the participants were informed that the questionnaire had been developed to investigate how the participants themselves rated their knowledge and use of the ICF before and after the in-service training. Then sections I to IV were presented, together with examples of statements and answers. All participants who were working as clinicians were encouraged to fill in section IV "what had the assessment concerned"; section IV was not only for professionals, who by law must document information in patient records. Those participants who had a position as administrator did not fill in section IV. Q2 was distributed to the participants by e-mail, and collected in person by one researcher visiting each habilitation centre 2 weeks later. If a participant had not filled in Q2 when the researcher visited, he or she returned it by post. The return rate in this study was 100%. The data were generally ordinal in nature and the results were the same in both non-parametric and parametric tests. Analysis of the results included mean (M), standard deviation (SD), effect size (ES) described by Becker (29): (ES = M post – M pre/SD pre), with small effect less than 0.20, medium effect up to 0.80, and large effect more than 0.80 (30), paired sample *t*-test with a significance level of 99.9%, and independent sample *t*-test.

RESULTS

In the 2 subgroups that "Attended" and "Attended and Used" the training, the participants' gender, age, and years of work experience were similar (Table I). However, the number of participants from different professional groups varied, and the professional groups' prior knowledge of the ICF and ICF-CY was not the same. There was a higher percentage of psychologists in the subgroup "Attended" (18.8% compared with 6.2%), while there was a higher percentage of occupational therapists in the subgroup "Attended and Used" (22.2% compared with 6.2%). Mean knowledge of the ICF was lowest among psychologists, speech therapists and nurses (M = 0.73–0.75) and highest among physiotherapists and occupational therapists (M = 1.26–1.30).

Knowledge of the ICF and ICF-CY was rated on a 4-point scale, ranging from "0 = none" to "3 = use often in clinical work" (Table III). The results in Table IV show that:

- The change in knowledge of both the ICF and the ICF-CY was significant in the subgroup that "Attended and Used" the training, but only of the ICF-CY in the subgroup that "Attended" the training.
- The difference in knowledge between the subgroups after the training was significant, in that the subgroup that "Attended and Used" the training had a higher perceived knowledge of both the ICF and the ICF-CY.

Understanding of purpose and terms in 12 statements about the ICF framework was rated on a 5-point scale ranging from

Table III. *Overview of sections I–IV, statements and scales in questionnaire 1 (Q1) and questionnaire 2 (Q2)*

Section in Q1 and Q2	Statement, *n*	Scale
Section I		
Professionals' background	8	–
Attended or attended and used the in-service training (only in Q2)	2	Yes or No
Perceived knowledge about ICF and ICF-CY	3	0 = "none" to 3 = "use often in clinical work"
Section II		
Ability to explain purpose and terms in ICF framework	12	0 = "not easy at all" to 4 = "very easy"
Section III		
Ability to apply ICF-components on statements	15	0 = "not easy at all" to 4 = "very easy"
Section IV		
Ability to apply ICF components in assessment	9	0 = "not often at all" to 4 = "very often"

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

Table IV. *Means, standard deviations, and changes in perceived knowledge about the WHO classifications ICF and ICF-CY in questionnaire 1 (Q1) and questionnaire 2 (Q2) within the subgroups' "Attended" (n=32) and "Attended and Used" (n=81), and differences between the subgroups in Q2*

	Within subgroup "Attended" n=32			Within subgroup "Attended and Used" n=81			Between subgroups in Q2
Classification	Q1, mean (SD)	Q2, mean (SD)	ES†	Q1, mean (SD)	Q2, mean (SD)	ES†	Significant difference‡
ICF	0.84 (0.37)	0.91 (0.39)	0.19	1.10 (0.56)	1.38 (0.60)*	0.50	0.000
ICF-CY	0.59 (0.50)	1.13 (0.34)*	1.08	0.70 (0.58)	1.58 (0.55)*	1.52	0.000

*Significant difference within group between Q1 and Q2, $p \leq 0.001$.
†ES: effect size. Cohen (1988) defined a small effect as less than 0.20, medium effect up to 0.80, and large effect as more than 0.80.
‡Significant difference between subgroups in Q2, $p \leq 0.001$.
SD: standard deviation; ICF: International Classification of Functioning, Disability and Health; ICF-CY: ICF Children and Youth version.

"0=not easy at all" to "4=very easy" (Table III). The results in Table V show that:

- The change in understanding of purpose and terms was significant concerning all 12 statements in the subgroup that "Attended and Used" the training, but in only 8 out of 12 statements in the subgroup that "Attended" the training. For the latter subgroup the ability to explain the "Swedish name of ICF", "what is classified in the ICF", "purpose of the ICF" and "term capacity" had not changed after the training.
- The difference between the subgroups in understanding purpose and terms was significant in 8 out of 12 statements after the training, in favour of the subgroup that "Attended and Used" the training.

Understanding of ICF components in 15 statements was rated on a 5-point scale, ranging from "0=not easy at all" to "4=very easy" by deciding which component each statement referred to (see Table III). The results in Table VI show that:

- The change in understanding components was significant for all 15 statements in the subgroup that "Attended and Used" the training, but only for the statement "his ability

to communicate is delayed" in the component Activities/participation in the subgroup that "Attended" the training.
- The difference between the subgroups in understanding components after the training was significant in all 15 statements, in favour of the subgroup that "Attended and Used" the training.

The use of the components in assessment was rated on a 5-point scale, ranging from "0=not often at all" to "4=very often", for how often their assessment concerned the 9 statements formulated according to ICF components (Table III). The results in Table VII show that:

- The change in use of components in assessment had not changed in the subgroup that "Attended and Used" the training, nor in the subgroup that "Attended" the training.
- The difference between the subgroups in use of components in assessment after the training was merely seen in assessment of "what the child does in his own environment at home or in school", in the component Activities/participation in favour of the subgroup that "Attended and Used" the training (Table VII).

Table V. *Means, standard deviations, and changes in perceived ability to explain purpose and terms in the ICF framework in questionnaire 1 (Q1) and questionnaire 2 (Q2) within the subgroups' "Attended" (n=32) and "Attended and Used" (n=81), and differences between the subgroups in Q2*

	Within subgroup "Attended" n=32			Within subgroup "Attended and Used" n=81			Between subgroups in Q2
Purpose and terms to explain	Q1, mean (SD)	Q2, mean (SD)	ES†	Q1, mean (SD)	Q2, mean (SD)	ES†	Significant difference‡
Swedish name of ICF	0.67 (0.92)	0.89 (1.10)	0.24	0.76 (1.03)	1.35 (1.21)*	0.57	ns
Classified in ICF	0.57 (0.76)	1.04 (0.92)	0.62	1.08 (0.95)	1.65 (0.99)*	0.60	ns
Classified in ICF-CY	0.35 (0.50)	1.04 (0.81)*	1.30	0.87 (0.94)	1.71 (1.02)*	0.89	0.001
Purpose of ICF	0.70 (0.76)	0.93 (0.92)	0.30	1.13 (1.13)	1.76 (1.18)*	0.56	0.001
Term Body functions	0.77 (0.80)	1.33 (0.92)*	0.70	1.50 (1.19)	2.23 (1.01)*	0.61	0.000
Term Activities	0.62 (0.67)	1.30 (0.95)*	1.01	1.36 (1.09)	2.21 (1.02)*	0.78	0.000
Term Participation	0.68 (0.76)	1.37 (1.01)*	0.91	1.41 (1.14)	2.23 (0.98)*	0.71	0.000
Term Capacity	0.40 (0.51)	0.81 (0.88)	0.80	0.96 (1.07)	1.52 (0.99)*	0.52	0.000
Term Performance	0.37 (0.49)	1.11 (1.01)*	1.51	0.97 (1.03)	1.59 (1.02)*	0.59	ns
Term Environmental factors	0.68 (0.76)	1.33 (1.00)*	1.25	1.52 (1.16)	2.35 (1.02)*	0.71	0.000
Term Facilitators	0.47 (0.52)	1.00 (0.83)*	1.02	0.97 (1.05)	1.80 (1.03)*	0.74	0.000
Term Hindrance	0.55 (0.60)	1.15 (0.95)*	1.00	1.10 (1.12)	1.74 (1.00)*	0.57	ns

*Significant difference within group between Q1 and Q2, $p \leq 0.001$.
†ES: effect size. Cohen (1988) defined a small effect as less than 0.20, medium effect up to 0.80, and large effect as more than 0.80.
‡Significant difference between subgroups in Q2, $p \leq 0.001$.
SD: standard deviation; ICF: International Classification of Functioning, Disability and Health; ICF-CY: ICF Children and Youth version; ns: notsignificant.

Table VI. Means, standard deviations, and changes in perceived ability to apply ICF components on statements in questionnaire 1 (Q1) and questionnaire 2 (Q2) within the subgroups' "Attended" (n = 32) and "Attended and Used" (n = 81), and differences between the subgroups in Q2

Statements to refer to ICF components (b, s, d/a, d/p, e)	Within subgroup "Attended" $n=32$			Within subgroup "Attended and Used" $n=81$			Between sub-groups in Q2
	Q1, mean (SD)	Q2, mean (SD)	ES†	Q1, mean (SD)	Q2, mean (SD)	ES†	Significant difference‡
She can't handle stress (b)	0.85 (0.75)	1.14 (0.93)	0.39	1.23 (1.03)	2.09 (1.02)*	0.83	0.000
She easily loose attention (b)	1.19 (1.15)	1.33 (1.11)	0.12	1.35 (1.04)	2.19 (1.09)*	0.80	0.000
He can control his bladder for 2 hours (b)	1.56 (1.01)	1.57 (1.03)	0.01	1.85 (1.28)	2.59 (1.06)*	0.58	0.000
Her eye is defect (s)	1.89 (1.00)	2.00 (1.09)	0.11	2.14 (1.25)	2.99 (0.96)*	0.68	0.000
The structures of his trunk are stiff (s)	1.89 (1.03)	1.82 (1.12)	−0.06	2.16 (1.26)	2.92 (1.04)*	0.60	0.000
Her hip is dislocated (s)	1.88 (1.09)	1.96 (1.14)	0.07	2.15 (1.18)	2.92 (1.08)*	0.67	0.000
He cannot ride a bicycle (d/a)	1.43 (1.01)	1.61 (1.10)	0.18	1.71 (1.15)	2.56 (0.97)*	0.74	0.000
His ability to communicate is delayed (d/a)	0.89 (0.91)	1.61 (0.99)*	0.79	1.23 (1.04)	2.27 (1.07)*	1.00	0.001
Train Lisa to write her name (d/a)	1.22 (0.74)	1.44 (0.93)	0.30	1.56 (1.24)	2.27 (1.07)*	0.57	0.001
He interacts well with others when he plays (d/p)	1.89 (1.09)	1.61 (1.20)	−0.26	2.02 (1.31)	2.71 (1.02)*	0.53	0.000
He wants to go to cinema with his assistant (d/p)	1.67 (1.02)	1.71 (0.93)	0.04	1.98 (1.21)	2.82 (0.94)*	0.69	0.000
She plays football together with her friends (d/p)	1.74 (1.15)	1.79 (1.13)	0.04	1.95 (1.27)	2.65 (0.99)*	0.55	0.000
The wheelchair is to small (e)	1.43 (1.01)	1.64 (1.06)	0.21	1.73 (1.10)	2.79 (0.97)*	0.96	0.000
To take away his doorsteps (e)	1.93 (1.01)	1.86 (1.11)	−0.07	2.25 (1.19)	2.63 (1.15)*	0.32	0.000
Instruct staff about Carl's play with friends (e)	1.50 (1.07)	1.68 (1.19)	0.17	1.87 (1.33)	2.68 (1.01)*	0.61	0.000

*Significant difference within group between Q1 and Q2, $p \leq 0.001$.

†ES: effect size. Cohen (1988) defined a small effect as less than 0.20, medium effect up to 0.80, and large effect as more than 0.80.

‡Significant difference between subgroups in Q2, $p \leq 0.001$

b: body functions, s: body structures, d/a: activities, d/p: participation, e: environmental factors; SD: standard deviation; ICF: International Classification of Functioning, Disability and Health; ICF-CY: ICF Children and Youth version.

DISCUSSION

These results suggest that a 2-h information meeting with a home assignment followed by 2-day training in using the ICF and ICF-CY is an effective method of exposing professionals to the framework and increasing their knowledge and understanding of it for as long as one year after training, especially for professionals who have prior knowledge of the framework and use the framework conceptually after training. The effect on actual application of the ICF/ICF-CY framework in everyday work is less impressive. Professionals who report that they use the framework seem to focus more on assessing the child in relation to performance of activities in everyday environment than those who do not use the framework. Future studies

Table VII. Means, standard deviations, and changes in assessment, as described in statements related to ICF components in questionnaire 1 (Q1) and questionnaire 2 (Q2) within the subgroups' "Attended" (n = 32) and "Attended and Used" (n = 81), and differences between the subgroups in Q2

Assessment described in statements related to ICF components (b, s, a, p, e)	Within subgroup "Attended" $n=32$			Within subgroup "Attended and Used" $n=81$			Between subgroups
	Q1, mean (SD)	Q2, mean (SD)	ES†	Q1, mean (SD)	Q2, mean (SD)	ES†	Significant difference‡
Body function (e.g. pain, breathing) (b)	1.50 (1.53)	1.54 (1.10)	0.04	1.78 (1.21)	1.71 (1.09)	−0.06	ns
Psychological functioning is (e.g. how he/she thinks and reasons, how he/she behaves) (b)	2.96 (0.94)	2.28 (1.06)	−0.72	2.27 (1.02)	2.21 (0.94)	−0.06	ns
Organs (e.g. degeneration, defects) (s)	0.88 (1.09)	1.16 (1.21)	0.26	1.23 (1.07)	1.25 (1.08)	0.02	ns
Activities he/she can perform (e.g. in test situations) (a)	2.17 (1.15)	1.87 (1.36)	−0.26	2.31 (0.92)	2.25 (0.95)	−0.07	ns
What he/she does in his own environment at home or in school (e.g. read a book, walk indoors) (a)	2.12 (1.33)	1.80 (1.23)	−0.24	2.64 (0.69)	2.58 (0.82)	−0.09	0.000
What he/she does on own initiative in daily situations (p)	2.40 (1.12)	2.36 (0.95)	−0.04	2.37 (0.83)	2.51 (0.84)	0.17	ns
Interaction with others in his/her environment (p)	2.72 (0.98)	2.16 (1.18)	−0.06	2.34 (0.86)	2.40 (0.88)	0.07	ns
Physical environment (e)	1.00 (1.04)	1.48 (1.33)	0.46	1.48 (1.08)	1.50 (1.13)	0.02	ns
Support and attitudes from people in his/her environment (e)	2.46 (1.10)	2.00 (1.10)	−0.42	1.96 (0.94)	2.27 (0.98)	0.33	ns

*Significant difference within group between Q1 and Q2, $p \leq 0.001$.

†ES: effect size. Cohen (1988) defined a small effect as less than 0.20, medium effect up to 0.80, and large effect as more than 0.80

‡Significant difference between subgroups in Q2, $p \leq 0.001$

b: body functions; s: body structures; a: activities; p: participation; e: environmental factor; SD: standard deviation; ICF: International Classification of Functioning, Disability and Health; ICF-CY: ICF Children and Youth version; ns: not significant.

need to focus more on how training affects ways of working, e.g. does the content of intervention plans and patient records change following training.

We found, as did Reed et al. (10), that both self-directed and instructor-led learning formats are effective training mechanisms. Like Read et al. (10), we suggest caution in using self-directed formats as the primary vehicle for training, as this may result in participants viewing the ICF as less valuable. In the pilot course of in-service training we used self-directed learning by sending the home assignment to the participants by e-mail prior to the 2-day training and there were negative comments about the ICF when the training started. Thus, in the present study we mixed instructor-led learning with self-directed learning in the framework (see Table II). The participants commented that the framework helped them to reflect on the content of interventions. In writing habilitation plans they experienced difficulties in stating the purpose of their interventions, and stated that important information on individuals' functioning and health according to ICF components was sometimes not documented even though they had the information. The ICF was a support in writing plans. They also commented on the efficacy of having the home assignment related to an everyday task from their own workplace. These results indicate the importance of relating ICF/ICF-CY training to the everyday working context of the participants. A coding exercise with no relation to everyday working contexts may not have an impact in the long run.

Concerning knowledge and understanding of the ICF and ICF-CY, the results show that learning takes time, especially when participants have limited prior knowledge of the framework. Both instructor-led and self-instructed learning probably need to be supported with new learning materials, such as the ICF Overview and ICF-CY Forms, in order to facilitate the use of the ICF/ICF-CY in everyday work. Participants who attended and used the ICF/ICF-CY reported change both in their ideas and in their practice.

Results on the use of ICF components in assessment are difficult to interpret since only one statement changed between before and one year after, namely "what the individual does in his/her own environment at home or in school" in the sub-group that "Attended and Used" the training. This result may indicate that participants who used the framework became more focused on the performance of activities and participation. Another explanation might be that the measured change may not be a change in use, but a change in awareness of what is done in intervention work. For change in use participants probably need to be informed about and have opportunities to try out good published examples from professionals' area of work e.g. occupational therapists and physiotherapists (31–32). However, access to scientific articles does not ensure use of the framework in a clinical setting; for this, supportive leaders, systems and routines in everyday work are also needed (23). Rentsch et al. (23) report on the thorough preparation, commitment and time that were needed to implement the ICF in assessment, rehabilitation conference and documentation. Now leaders also have the MHADIE recommendations on how and for what ICF should be used (27). It is hoped that these recommendations will result in implementation of the ICF framework in daily work.

Limitations

One limitation of this study was the criteria for inclusion of participants and the lack of criterion concerning "Training for what?" (10). Participants were selected as a sample of convenience. The employer at each habilitation service informed selected teams about the project and participation. Even if one criterion for inclusion was that the participants had agreed to participate after their employer had informed them about the project, one should bear in mind that this is not equivalent to the participants of a team or the employer having decided what to use the framework for in their daily work after the training.

Another limitation was the statistical analysis used. A log-regression model could have been used to investigate, for example, professional discipline and effects of training. However, there are few studies on ICF training, and in the present study the focus is on reported use of the ICF framework after training, with comments on professionals' discipline and prior knowledge about ICF, rather than a thorough statistical analysis.

A final limitation is that the participants perceived knowledge and ability was asked about, but not actually observed. The results of the present study should therefore not be considered as the impact of in-service training on overt behaviour or implementation of ICF framework in daily work (12–14). Instead the impact of the training can be seen as an impact on participants' attitudes towards the ICF framework (10, 12, 23). Nevertheless, the results of the present study would have benefited from investigation of validity and reliability in the questionnaires.

In conclusion, professionals who already have knowledge of the ICF framework should focus on increasing their understanding of it in everyday work situations and in assessment, while professionals who have limited knowledge of the framework should focus on gaining knowledge and understanding the purpose, terms and components of the framework. It is recommended that in-service training in using the ICF and ICF-CY should be tailored to different groups of professionals.

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