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Perspectives on Teaching the International Classification of Functioning, Disability, and Health Model to Physical Therapy Students

Cheryl Peters-Brinkerhoff, EdD, PT

BACKGROUND: During a reaccreditation visit, deficiencies were discovered in the clinical education curriculum regarding patient-centered care in a Doctorate of Physical Therapy program. To understand the problem and address those deficiencies, the clinical internship experience was examined using the International Classification of Functioning, Disability, and Health (ICF) model as a conceptual framework for clinical reasoning. **OBJECTIVE**: This qualitative case study aimed to study (1) perceptions of physical therapy (PT) students regarding their knowledge and learning experiences during clinical affiliations and what knowledge they acquired of the ICF as applied to patient-centered care during their internship, and (2) the perceptions of clinical instructors (CIs) of their knowledge of the ICF model, its integration into their practice, barriers to its use, and the learning experiences the CIs provided to students regarding the ICF model. **METHODS**: Data were collected using questionnaires sent to 42 CIs and at focus groups of 22 PT students conducted at the study site. Data were also collected from student evaluations on the Clinical Performance Instrument. Data were analyzed using coding techniques and themes based on the use of the ICF model in the clinical setting by students and CIs. **RESULTS**: Most CIs reported a poor understanding of the ICF model or how it relates to patient-centered care; both CIs and students reported none to minimal learning experience related to the ICF model. Document analysis of the student evaluations revealed no assessment of the ICF model was mentioned. **CONCLUSION**: Learning experiences of all domains of the ICF model are generally not being presented to PT students during their clinical affiliations. *J Allied Health* 2016; 45(4):236–242.

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IN 2008, the American Physical Therapy Association (APTA) adopted a conceptual model for assessing and treating patients based on the World Health Organization's (WHO) International Classification of Functioning, Disability and Health (ICF) model.[1] The purpose of the ICF was to develop a common language across medical disciplines to report patient outcomes and guide the best courses of treatment. In 2011, a Doctorate of Physical Therapy (DPT) program in California was evaluated for re-accreditation, where deficiencies were discovered by the Commission on Accreditation in Physical Therapy Education (CAPTE) in the learning experiences provided to students during their clinical internships addressing the following objectives:

CC 5.9. Patient involvement in their own care,
CC 5.19. Using clinical judgment to enhance patient/client outcomes, and
CC 5.34. Collaborating with patients to determine a plan of care that is culturally competent and patient-centered.

Each of these criteria is addressed when following the ICF model as a conceptual framework.[1] The lack of learning experiences being met as found by CAPTE, indicated that the clinical instructors were not assisting with the students' education of patient-centered care as described in the ICF model.

This qualitative study explored the perspectives and knowledge of clinical instructors (CIs) and students affiliated with a DPT program, where a gap in practice was identified in the clinical curricula. A qualitative case study methodology was used to answer the following questions:

1. What skills did the students from the study site possess in practicing patient-centered care following the ICF as the conceptual framework by the end of their last internship?
2. What learning experiences did students from the study site receive from their clinical instructors regarding patient-centered care using the ICF model during their last term internship?
3. What knowledge did clinical instructors who mentor students from the study site possess to mentor their students' from the study site relative to patient-centered care by following the ICF model?
4. What components of the ICF model did clinical instructors who mentor students from the study site integrate into their practice?

5. What barriers existed to keep the clinical instructors from practicing patient-centered care using the ICF model?

Review of the Literature

According to the work of Healy,[2] to gain the necessary experience to become entry-level physical therapists (PTs), students should spend at least 30% of their education at a clinical site observing patient care and practicing the contextual information they learn in the other 70% of their education. Multiple schools, across the United States and internationally, have been accredited by CAPTE to provide PT students with didactic experience and to coordinate their clinical experiences.

The ICF is the model and conceptual framework promoted by the APTA and the WHO for use and adaptation by all medical professionals as a framework to demonstrate how multiple factors impact patients.[1,3,4] The factors to be considered include: a) the impact of a health condition on body function and structures, b) activity (such as climbing stairs or walking to the mailbox), and c) participation (such as patient involvement in church or community organizations). In addition, the ICF considers other personal factors, such as sex, age, coping styles, and co-morbidities, as well as environmental contextual factors, such as family support, socioeconomic status, and access to health care.[5–7]

To develop the ICF model, the WHO received input from many disciplines within the international medical community to update the terminology and conceptual frameworks used for people with illness, injury, and disabilities.[8,9] Before the WHO published the ICF model, the relationship of the medical professional to the patient had been more paternal, with the process of delivering care influencing the health outcome. According to this approach, the patient and health care provider perceived a patient outcome to be solely the result of the health care provider's service to the patient. The patient's participation and contributions to his or her community, workplace, leisure activities, and environment were not considered.[10]

The conceptual model previously followed by the PT community was known as the Nagi model, or the functional activities limitations model, which was developed in 1965 by Saad Nagi[11] and expanded in 1991. In 1980, the WHO published the International Classification of Impairments, Disabilities, and Handicaps (ICIDH). Both the Nagi and ICIDH models contextualized a health condition as a sequence of consequences of the body, the person, and society, but neglected other factors that influence a person's disability or health, such as environment and personal factors (i.e., mental status or family support).

Both models recognized the presence of external factors and the relationships between the person and his or her environment; however, these areas were not adequately explored by the WHO medical community contingent until 2002, when the WHO, as well as the APTA, recommended that the medical community follow the ICF model to first consider the environment the person lives in, what activities he or she contributes to, and how he or she fits into society (Figure 1).[1,12] As such, the CAPTE criteria must be followed to align with the APTA and WHO recommendations of using the ICF as the conceptual model for patient-centered care.

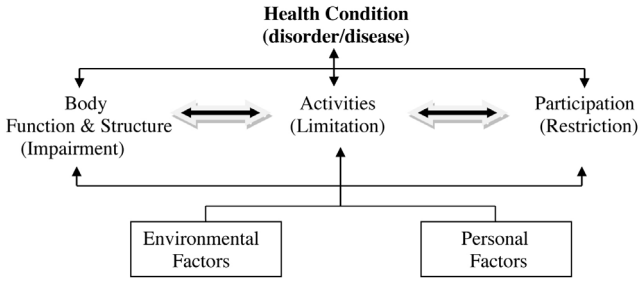

FIGURE 1. International Classification of Functioning, Disability and Health (ICF). The ICF model is no longer linear and more accurately depicts how patients' activities and participation are affected not only by health condition and impairment, but the environmental and personal factors pertaining to that patient.[5]

Evidence of the Problem from the Professional Literature

Currently, researchers have developed postgraduate tools to educate health care providers, including PTs, about this relatively new conceptual model. Evidence indicated that members of the medical community have been exploring the use of the ICF model with specific diagnoses such as mental disorders,[13] arthritis,[11] ankle stability,[14] pediatrics,[5] and geriatric populations.[15] For entry-level PT students at the study site, the ICF is introduced during the didactic portion of two specific courses; however, what is specifically taught and practiced during their clinical internships is not known.

The student assessment tool used by the CI, the Clinical Performance Instrument (CPI), evaluates the use of the ICF model with one objective: the student "evaluates data from the patient examination (history, systems review, and tests and measures) to make clinical judgments."[16] This objective assesses the student's ability to interpret the information from a patient's medical history, to screen the different organ systems, and to choose and administer appropriate tests and measures based on the results of the systems review. The systems review includes an assessment of the cardiovascular-pulmonary systems, neuromuscular system, musculoskeletal system, communication, cognition, mental status, and learning style of the patient. The student is then evaluated on his or her ability to choose and administer the appropriate tests and measures based on the results of the systems review. The CPI has been found to be a

valid measure of PT students' clinical performance, as it exhibited good internal consistency and inter-rater reliability; however, the rater reliability has not been measured.[17] In a study by Proctor et al.,[18] the scoring of the CPI was analyzed over a 7-year period. Their results showed that CIs were scoring various clinical internship levels of students consistently over time as measured from the first internship through the last internship, but their results did not show rater reliability.

After the student completes the patient's assessment, the results must be interpreted to determine how the outcomes affect the patient's ability to participate in functional activities and in-life activities, such as attending church or gardening. Each CPI objective is followed by a list of examples of the expected behaviors the CI should be looking for to assess the student's skill objectively. The sample behavior specific to the ICF model is listed under Objective 10: "Evaluates data from the patient examination (history, systems review, and tests and measures) to make clinical judgments." The sample behavior specific to the ICF model reads, "Synthesizes examination data and identifies pertinent impairments, functional limitations, and quality of life."[16] For the student to exhibit entry-level competence for this objective, he or she is required to interpret all assessment results to determine the appropriate plan of care based on the patient's inability to participate in functional activities as well as how the impairment affects the patient's quality of life.[19,20]

Part of the change in practice for PTs is to include valid and reliable outcome measures as part of their evaluation, which is in compliance with the ICF model. With the use of outcome measures, PTs are able to quantify the change in functional abilities in their patients and assist therapists to know if the predicted or hypothesized functional outcome has occurred. The use of outcome measures assists in developing a common language between therapists and the health care community. This common language could provide a basis of comparing which intervention will result in the best outcome within the domains of the ICF, including body structure function, activity, and participation.[20,21]

In a recent study by Wedge et al.,[22] the authors found that PTs still experienced barriers when using outcome measures. Wedge et al.[22] completed a qualitative study and found three major factors as barriers: concepts of time, knowledge, and facility culture. Though the therapists valued the information collected from the results of the outcome measures, they still needed the psychometric properties for each outcome measure as well as information regarding availability and accessibility.

The research studies by Atkinson et al.[5] and Recker-Hughes et al.[23] indicated that CIs desire, and are expected, to have the advanced clinical skills and experience necessary to mentor and teach PT students to be successful entry-level therapists. However, the research also noted minimal-to-no use of the ICF model as the conceptual framework to complete patient evaluation and develop a plan of care.

The literature affirms that the APTA supports the implementation and integration of the ICF model; therefore, all PTs should be acquainted with and implement the concepts of the ICF model. However, the literature does not specifically demonstrate that PT CIs have adequate knowledge about the ICF model to provide learning experiences to their students or to implement this model into their everyday practice. The literature also points out that 49% of all PTs are not using outcome measures and reports that they will not be using outcome assessments in the future.[20] This may imply a lack of motivation, time, resources, or support for the CI in the use of outcome measures and the ICF model at their specific clinical site.

Subjects and Methods

This qualitative case study used purposeful sampling of participants by means of maximum variation dependent on the clinical site where the CIs practiced and the students were assigned during their last internship. Based on the use of purposeful sampling, the CIs and students who were asked to participate in this study were chosen from the study site. Maximum variation was used to explore the differences between the common experiences of the CIs and students from five different settings of clinical sites: inpatient rehabilitation centers, acute care hospitals, inpatient and outpatient pediatric settings, outpatient orthopedic settings, and outpatient adult neurological settings.

Selection Criteria

The participation criteria for CI study participants included CIs who were willing to participate, were known to have mentored PT students from the study site, had a minimum of 1 year of experience as licensed PTs, and, to provide maximum variation, practiced in one of five different clinical sites already described. Of 5,000 emailed requests and consents, 42 CIs were willing to participate.

The eligibility criteria for the student participants included the willingness to participate, enrollment in the study site DPT program, and completion of their last internship. For maximum variation,[24,25] the students were also chosen based on the types of facilities they were assigned for their internship experience, as previously described Because students had just returned from their final internships, they easily recalled the learning experiences presented to them from their CIs regarding patient-centered care using the ICF model as the conceptual framework.

The criteria used to select the PT clinical sites was based on different facility cultures,[26] types of patients treated by the CIs and students, and convenience sam-

pling (the most common clinical sites assigned to the students).[27]

Access to Participants

To study and understand the learning experiences and knowledge of the students regarding patient-centered care using the ICF model during their clinical internships, five focus groups were organized with 3 to 8 students each who were selected from the study site, for a total of 22 students. The experiences and perceptions of PT CIs were different from facility to facility, and therefore, to understand the internship experience from clinical sites that focused on different types of patients, the CI participants were selected from five different types of clinical sites, for a total of 42 CIs.

The administration and Institutional Review Board (IRB) at the study site approved this study to allow access to the students and their CPI data. A letter of permission was sent to the PT program coordinator and the president of the study site to request access to the names, emails, and addresses of the students and their CPI documents. Once approval was granted and the CPI data acquired, document analysis was completed on the objectives in the CPI specific to patient-centered care.

To gain access to the study site's database and the names of CIs, a letter asking for permission was sent to the PT program director and president of the study site. As required by the study site, IRB approval was requested at the study site. Once approval and access was gained, five specific types of sites based on patient diagnosis were selected and the PT CIs at those sites were selected to have letters of consent and questionnaires sent to them.

Study Procedures

To capture as much of the true essence of the perspectives of PTs students and CIs, the research methodology chosen was the qualitative case study design. To provide maximum variation of the participants,[25,27] questionnaires were sent to CIs who were employed in one of five different clinical sites to explore their perspectives, knowledge, and possible barriers and/or opportunities regarding the use of the ICF model. Students were interviewed who were placed in one of five different clinical sites for their internships to explore their learning experiences, knowledge, and perspectives in their use of the ICF model.

Data Collection

The data included direct quotations from CIs and students about their experiences, opinions, feelings, and knowledge. To complete the data set, the comments from the CIs specific to the objectives from the CPI were also collected. The data were obtained through open-ended questionnaires, focus groups, and document analysis. The questions presented to CIs and PT students are listed in Appendix A and B (available online). Document analysis was completed on the CPI document for all students from the same cohort as the students interviewed to explore any comments or assessment of the use of the ICF model as a conceptual framework.

The names of 6,200 CIs who had mentored study-site PT students were collected. Each CI was emailed a cover letter and a copy of the consent form for signature with instructions of the participation criteria. Of the 6,200 names, 42 CIs met the participation criteria and were willing to answer the questionnaire. Forty questionnaires were answered via SurveyMonkey and two questionnaires were mailed and returned by the CIs.

An open-ended questionnaire of 17 queries was used to collect data from the CIs and was emailed or mailed within 48 hours of receipt of the informed consent form. The questionnaire began with an explanation and overview of the purpose of the study, including a full disclosure of how the information would be used. Reminders that the answers to the questions were recorded in a log, that the CIs would spend approximately 30 minutes to complete the questions, and that the participants could keep a copy of their answers were also displayed in the cover letter to the CIs.

To organize the student focus groups, the names of the seventh-term students who had just completed their final internship were gathered from the study site registrar. The names and emails of 35 students were obtained, and a cover letter with a consent form was emailed to each student. Of the 35 students, 22 participated in the focus groups. Five interviews were scheduled and completed. Within 14 days of the receipt of all of the informed consent forms, five focus groups were organized and scheduled to meet in a classroom at a convenient time at the study site. A set of 15 questions was asked to each focus group for answer and discussion.

After permission was received from the PT program director and president of the study site, the CPI documents were reviewed. Clinical instructor comments and the scores from the visual analog scale from the two objectives that were specific to the ICF conceptual framework were recorded from all students who were enrolled in the same cohort as the students who participated in the focus groups.

Data Analysis

To keep track of data and emerging understandings for the CIs, PTs students, and CPIs, a research log was used to transcribe the data. For the student focus groups, the log was also used to take notes during the interviews. Data were organized into codes and themes from the student focus groups, the CIs' questionnaire, and the CPIs.

TABLE 1. Number of Clinical Sites That Do and Do Not Follow the ICF Model

Clinic Site	No.	Follows ICF Model	Does Not Follow ICF Model
Acute care hospital	7	1	6
Outpatient neuro	4	1	3
Outpatient orthopedics	26	5	21
Pediatrics	4	3	1
Inpatient rehab	6	3	3

TABLE 2. Number of Clinicians Who Do and Do Not Follow the ICF Model Based on Years of Experience

Years of Experience	No.	Follows ICF Model	Does Not Follow ICF Model
1–5	12	6	6
6–10	6	3	3
11–15	12	1	11
16–20	2	0	2
21 +	10	2	8

Codes and Themes

As each student focus group interview was completed, the transcript was read, the purpose of the study was reviewed, and notes were written in the margins to capture reflections, ideas, possible themes, and ideas to pursue from other sets of data.[27] As new sets of data were retrieved, the information was compared to the previous data to continue to develop related patterns of information, or codes, and placed into categories, or themes.

As the CI questionnaires were returned, the purpose of the study was reviewed, each questionnaire was read, and notes were written in the margins to capture codes, themes, ideas, and reflections. As each questionnaire arrived, the information was compared to the last, and related patterns of information were recorded. The codes were categorized into themes to assist with answering the research questions.

After the CPI documents were received for document analysis, each objective specific to the ICF model was reviewed. The purpose of the study was reviewed, and comments and reflections about possible themes and ideas were written in the margins. As patterns of information emerged, the data were coded and categorized into themes. Appendix C (available online) shows the analyses of the combined codes and themes as they relate to the research questions.

Evidence of Quality

To provide accuracy and credibility of the findings, many methods were included. Maximum variation of the participants was used for a broad representation of CIs in different settings; member checking, for validation of accuracy of the data retrieved from the participants; triangulation of the data, to compare reliability from different venues; and peer review of the questions used for the participants prior to distribution. Peer review was also used to check for accuracy and consistency of the focus group interview and clinical instructor questionnaire transcripts as well as checking for consistency of the definitions of the codes and themes. The data were analyzed to explore if the ICF model was used more consistently in one setting compared to another (see Table 1). The other variation explored was the CIs' years of clinical experience to determine if the ICF was used more frequently based on this variable (see Table 2).

Results

The research questions exploring the skills that the PT students possessed by the end of their last internship and the learning experiences they received regarding practicing patient-centered care following the ICF were answered (1) during the student focus groups, (2) by specific questions on the questionnaire received from the CIs, and (3) through document analysis of the CPI. Most of the students perceived they had received a working knowledge of the ICF model during their didactic work at the study site and demonstrated their knowledge and understanding of the five domains of the ICF model during the interviews. When asked if they perceived receiving learning experiences or being assessed by their CIs during their clinical rotations regarding their skills using the ICF, most students perceived they had not received explicit learning experiences or been assessed on the ICF model on the CPI. Most of the CIs confirmed not assessing or providing ICF learning experiences to the students regarding the ICF model. Most of the CIs reported not using the CPI to evaluate student skill level regarding following the ICF model, though most CIs perceived the CPI as providing sufficient resources to evaluate the students in their use of the ICF model. To further validate the findings, the document analysis of the CPI found no comments using concepts or language from the ICF model indicating the students were not assessed in their ICF skills.

The questionnaire completed by the CIs also explored the research question regarding the knowledge the CIs have regarding the ICF model and what barriers may exist causing the lack of use of the ICF model by the CIs. The domains of the ICF that the CIs may be using in their clinical practice were answered through the CI questionnaire and student focus group interviews. Most of the findings indicated that CIs have limited knowledge of the ICF model and do not follow it in their clinical practice. A few CIs reported perceiving some knowledge of the model and demonstrated use of the ICF model through their use of Medicare G codes, which report the activity limitations of the patient, or

using the ICF philosophically but not explicitly. The barriers to using the ICF model reported by the CIs included misperceptions of how to follow the ICF model in the clinic to assist with assessments and plan care for patients, a lack of support by some facilities, and a lack of education and understanding of the goals and purpose of the ICF model.

Discussion and Conclusions

This case study explored the CIs' and students' perception and knowledge of the ICF model as a conceptual framework for clinical reasoning. Though the CAPTE deficiencies are what prompted the study, this study focused on the knowledge and learning experiences provided to the students by CIs of the five domains of the ICF model. Each of the deficiencies described are included in specific domains. An example would be using cultural competence as part of the participation or personal factor domains and clinical judgment to enhance patient/client outcomes included in the participation, activity limitations, and body structure and function domains. Outcome measures assist with determining the goals of the patient in the activity and participation domains, considering the environmental and personal factors.

The study site was required to exhibit how the deficiencies were corrected by providing new goals and objectives in specific courses. The learning experiences that the CIs provided to the students were not measured by the same standards as the study site. Therefore, to determine if the students were receiving the practical application of the ICF model, this study was developed and completed. The CIs demonstrated they did not have working knowledge of the ICF model, and therefore they did not provide ICF-specific learning experiences to the students, as indicated through the student focus groups with triangulation through the CPI as indicated by the lack of supporting written documentation.

The sample size was not as robust as planned. Over 6,000 requests were distributed to CIs, all having mentored a student from the study site. Though a small sample size, the group was diverse and represented five different patient populations. Perhaps a generalization cannot be made from this case study, and therefore a larger sample size should be studied. However, to update the CPI and provide ongoing education will only enhance the knowledge base of all therapists, including the students graduating who did not receive the ICF learning experiences.

The findings from this case study indicate the need for the development of an ICF course as a conceptual framework for clinical reasoning for patient-centered care. The course could be part of the CI certification program or a post professional course offered by the study site. Because of the lack of documentation by the CIs in the CPI, the CPI could be reevaluated and the ICF language could be incorporated into the assessment document. If the CIs see the language and assessment of the ICF as a requirement in the CPI, then the ICF will have more meaning.

The WHO and the APTA agree that to enhance patient outcomes, the patient should participate more actively in their health care, and healthcare practitioners must consider the whole person, not just the impairment. As the ICF language and implementation of all of the domains become more integrated into patient care, the medical community will become more unified in their approaches to serving patients. Consistency of care and understanding the same language will only aid in our abilities to treat our patients and return them to their homes, families, and community.

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Appendices A–C for this paper are available online at www.ingentaconnect.com/content/asahp/jah, see vol. 45, no. 4, Winter 2016 issue.

APPENDIX A–B. Questionnaire and Interview Questions

Reminders:

a. The answers to your questions will be recorded in a research log.
b. A final report will be sent to you for member checking of accuracy and credibility after all of the data have been coded and put into themes.
c. You will spend approximately 30 minutes to complete the questions.
d. You may keep a copy of the answers.

APPENDIX A. Questionnaire for CIs

1. What type of facility do you work in? Please circle the answer that most closely matches your place of employment.
   - inpatient rehabilitation centers
   - acute care hospitals
   - pediatric settings (inpatient or outpatient)
   - outpatient orthopedic settings
   - outpatient adult neurological settings
2. How many years of experience do you have as a licensed physical therapist?
3. What is your perception of the ICF model?
4. What are the domains of the ICF model and how are they implemented in your facility?
5. What is your perception of the relationship between the ICF model and patient-centered care?
6. What is your perception of the use of the ICF model?
7. What learning experiences does your facility provide to students regarding patient-centered care or the ICF model?
8. What learning experiences do you provide to your students on patient-centered care and the ICF model?
9. What is your perception of your facilities support of the use of the ICF model?
10. What is your perception of your facility's support of patient-centered care?
11. How do you feel about outcome measures?
12. What is your perception of your facility's support of outcome measures?
13. Do you find value in the ICF model?
14. Do you feel there is value in patient-centered care?
15. What is your perception regarding continuing education on the ICF model?
16. What is your perception of how students are assessed regarding their use of the ICF model?
17. Do you use the ICF model in your daily treatment of patients? How do you model this for your students?

APPENDIX B. Interview Questions for Students

1. What is your perception of the ICF model?
2. What are the different domains of the ICF model and what do they mean to you?
3. What is your perception of the relationship between the ICF model and patient-centered care?
4. What is your perception of the use of the ICF model at your clinical site during your internship?
5. Did you experience any learning experiences related to patient-centered care or the ICF model?
6. What is your perception of how your clinical instructor supported the use of the ICF model?
7. What is your perception of how your clinical instructor supports patient-centered care?
8. How do you feel about outcome measures?
9. What is your perception of your CI's support of outcome measures?
10. Do you find value in the ICF model?
11. Do you feel there is value in patient-centered care?
12. What is your perception regarding your education on the ICF model?
13. What is your perception of how you are assessed regarding the use of the ICF model?
14. Do you predict you will use the ICF model in your daily treatment of patients?
15. Did your CI model this for you during your internship?

APPENDIX C. Final Codes and Themes

Theme	Code	Data
CIs have limited knowledge of ICF model	No knowledge of ICF (48%)	CI 38: "I feel like I have let my profession down. Honestly, I had to Google and look up definition and purpose of use. It has been a long time since school and I had to refresh my memory." CI 40: "I do not know much about it, I just started reading about it once I got your questionnaire." CI 26: "Unaware of what that model is."
	Some knowledge of ICF model (26%).	CI 21: "The concept is very congruent to the current method of service delivery at this facility, although it is not referred to as the ICF model. The team reviews body function and structure, personal wants and needs and environmental factors to encourage levels of participation and activities that encourage participation." CI 41: "I am aware of the ICF, but have never read the document in its entirety. Currently we use the definitions of disability related to G code reporting that originate from the ICF."
	Perceive using the ICF model but not the explicit use of the language (19%).	CI 15: "I already use some of the principles of the ICF model in terms of all of the factors within a patient's life affecting health but I don't use ICF specific terminology. We only started to use ICF for Medicare within the last month. I haven't used it yet with a student."
	CIs perceive using some or all of the ICF language explicitly (12%).	CI 29: "Yes and no, I do not reference the actual ICF pictorial model in the clinic, as my DPT education emphasized it so much. As a practicing clinician, I keep in mind that there are many factors that influence and drive the patient's diagnosis, prognosis, plan of care and progression of HEP which are addressed in the ICF model that improve upon the Nagi disablement model. With the few students I have had we use the language of the ICF, as they are also well versed in the same language."
	Most CIs could not name the domains (62%).	CI 25: "Body function—structural complications or difficulties the patient has such as high muscle tone. Participation—what the child would like to be able to do in the community such as play on the playground or swim. Activity—is a skill that they would like to be able to perform such as tie their shoes or shower independently or sit independently. We implement these by performing home visits to see what the child and family does at home. We also go out of our way to try to go to events that our child participates in such as the Mid-America Games." CI 28: "Impairment, activity, participation. Used mostly for goal setting and discussions with patients."
Students understand the basic concepts of the ICF model.	Most students understand the basic concepts of the ICF.	Student 2: "I think it is a good way to organize information when you are doing the evaluation part of your patient. It's a good way to organize and relate the physical or functional impairments to how they are functioning in everyday life. Because we learn here about how patients come to us and are in pain and there is such a big emotional component to their pain because of the dysfunction and they don't understand it, So I think it's nice because It reminds you to talk to our patient about how their pain is limiting them in their day to day life and then you can help them to make better changes to their function. I like the ICF as a little outline. We learn it so much here and I didn't understand why it was valuable until I was with the patients." Student 18: "I think it's a good way to look at your patient and gather data on impairments and things that are contributing to whatever condition they may have and kind of put things in perspective. You can see the big picture if their participation, normal day to day job and their day to day life and how the nitty gritty impairments are affecting them. And will give you a snap shot of each of those." Student 15: "I think it's a great framework for organizing patient in a general population as far as their dysfunction goes and I like how it's not just linear. I like that the personal environmental factors are included so you can see the patient holistically. And I also like how it breaks it apart in between like just the disease factors, and we treat dysfunctions as physical therapist, but also goes into their activity and their participation limitations, so how society views them and how their dysfunction is impacting their daily life and how they are seen in society. And I think it's probably a good way to try to come up with outcome measures because of Medicare and all the political stuff as far as how what we do as therapists are effective and any way to fix that and to show that what we (PTs) do and how to quantify it."

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APPENDIX C. *(continued)*

Theme	Code	Data
	All students could recall 3 of the 5 domains.	Student 2: "BSF/impairments/functional impairment/participation/BSF would be like spasticity or ROM, what you do with your testing. Functional limitations would be like the child cannot walk longer than 15 feet. Then the participation would be for the child when they can't walk from class to class or keep up with their peers, can't walk across the campus because they get to tire. The 3 are all related in like a tier in my mind." Student 23: "BSF, activity and participation. How to look at the phases of our evaluation and treatment and figuring out what we need to work on with each individual patient as they fit into a goal and treatment for all patients. You're going to have to have a system to evaluate and treat any patient; going to have to break it down to the specificity level of each patient because they are all going to be different. I think it is a very good framework that has a lot of areas with lots of different paths as you look at different people, different age groups and for the different diagnoses." Student 9: "Impairments, participation, activity limitations, I get the Nagi and ICF mixed up. We really don't know." Student 10: "BSF, activity limitations, participation." Student 6: "The big thing about the ICF vs. the Nagi is that the Nagi was very systematic and the ICF is interconnected. The ICF can go from participation back to the activity limitations, And vice versa."
	Most students did not recall, or misperceived, how the environmental factors are assessed using the ICF model.	Student 2: "When I was on my acute care rotation, I worked with an OT student that was actually from SA, Fl., I found it interesting because I found the OT's were always good at using the ICF model, they would catch things. I was with the OT clinical instructor, the OT student, and my clinical instructor, so we would go in and do home evals and co-treatments. The OT's always looked at what the bathrooms look like, what kind of equipment are you going to need, while I as the physical therapy was more concerned about balance and ambulation. So w/o the OT there, I would have fallen short of the whole participation, and at home where the patient needed to get up, go to the bathroom, do their thing. My clinical instructor didn't do any of that. The OT clinical instructor helped to train me about what goes on at home. We would look at RROM, check, strength, check, bed mobility, check. And isn't that what the ICF is about is Functional limitations and how it relates to participation?" Student 2: "Then in my pediatric rotation, I worked with an OT who helped me with a patient with spina bifida who had a hard time getting into the bathroom because the doorways was not wide enough, my clinical instructor helped me with that. The ICF language was NEVER used. At my workman's comp site we used participation, but only to get the patient back to work. The setting 'sets you up' for 'participation'. The ICF was not used as the conceptual framework; the purpose of the physical therapy clinic was to get these patients back to work The thought was there." Student 3: "I think there are some limitations to the model. Especially with the minority of patients we might treat, but during our history taking, if they are having abuse at home, in terms of patient centered, we should be there for them as physical therapy's, not to treat it, but to address it, obviously we would legally obligated to, to report that, I think the ICF fails in that, in recognizing that part, but it's a small part, it's a basic guideline, but that's where I think it falls short." Student 2: "I don't see where it falls short because I think everything can relate to the patient's participation like, what 3 was saying, if there is some abuse at home, and does it relate back to participation. Does their emotional state affect their pain? … I don't think the patient always understands where the pain is coming from, how or why it is affecting their everyday life and why they are being so emotional, so I think that is where we *(as PTs)* come in and have to fill the gap for them, and then it becomes more patient centered care. They won't always come in with a functional disability, they will come in with pain, or they will come and not realize the relationship between the two, so I don't think it is patient centered care unless we can fill in the gap."
Most students did not receive learning experiences explicit to the ICF model during their clinical internships.	Students did not participate in any learning experience regarding the ICF model. And ICF language was not used explicitly.	

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APPENDIX C. *(continued)*

Theme	Code	Data
	Int. 2: 60% never received ICF learning experiences, 27% of the CIs never used the ICF language. Int. 3: 67% never provided learning experiences for the ICF model, 47% of the CIs never used the ICF language.	Student 8: "It (the ICF) was never mentioned or used but I think indirectly. We used it. I think we found out what was important to the patient what they could do in life and we definitely directed our patient towards that but there was never a mention of the ICF model I, but indirectly everything was gone over in an organized manner but definitely not in the actual form of the ICF model." Student 14: "… We never mentioned the words ICF or model, but yes, our main goal was to restore the functional limitations of the patient so they could return to their role in society whether it was work or play or recreation or something around the house. So indirectly I believe we did structure our treatment plan, goals and our protocols around that but it never was verbalized. There was no picture on the wall. There was not anything that the patient knew anything about."
	Student received 1–2 learning experiences. Int. 2: 20% received 1–2 learning experiences, 7% received more than 1x/wk and 1 received other (no explanation). 67% of CIs only referred to the ICF model 1–2 times throughout the entire 8 weeks of internships. Int. 3: 20% provided 1–2 learning experiences; 33% referred to the ICF 1–2 times only.	Student 23: "The ICF language was never used but one of the most specific examples I can come up with is the home evaluation with an occupational therapist where the OT looked at how the patient could function within their own home based on what their body structure and functional limitations were and assess how the patient managed their walker and wheelchair in the home." Student 1: "My CIs did not use the terminology, but similar to 2, they did focus on the patient about their hobbies and what they wanted to do with their life trying to fit in the function with participation. The idea was there but they *didn't* use the ICF language."
	Students participate in ICF learning experiences more than 1–2x/wk. Int. 2: 7% received learning experiences 1x/wk, 1 CI used the ICF language >1x/wk (7%). Int. 3: 13% provided ICF learning experiences more than 1–2x/wk; 1 CI (7%) used the ICF language 1x/wk.	Student 15: "The ICF model is body structure and function, activity limitations and participation limitations also has circular arrows pointing towards personal factors and environmental factors. Body structure and function refers to the dysfunction of the body that the patients come to physical therapy with. Whether its knee pain and then we figure out what's causing their knee pain. And then their activity limitations is 'it hurts when I go up stairs" and then their participation limitations is 'I'm actually a professional stair climber and so now it's impacting my ability to bring home a paycheck' and then personal factors come in and environmental factors like what typical stair do you climb? 6 inches or 4 inches?"
Most CIs do not provide learning experiences specific to the ICF model.	CIs perceived giving good patient-centered care and good standard of care, no mention of providing learning experiences pertinent to the ICF model (46%).	CI 4 reports this type of learning experience for their students, "in-services on current research that promotes patient-centered care." CI 10: "Students at our facility have access to MD visits as well as the opportunity to observe surgeries of current or future patients. There they have the opportunity to speak with the physician regarding his expectations. The students are also, oftentimes, able to provide the physician with information regarding a current patient's desire to participate in activities of a certain level that the physician my not always have been able to know if he hadn't spent rehab time with the patient." CI 16: "We have patient centered care but not specific to the ICF mode." CI 38: "For patient-centered care, my students participate in home evaluations and goal setting for discharge home. The daily treatments and interventions way heavy on patients' functional level and returning patients to home. Students could observe OT, speech and social worker sessions. Participate in team conference and daily huddles for the team work for getting patient safely discharged."
	CIs state they do not provide explicit learning experiences following the ICF model (40%).	CI 30: "None formally. Somehow it may indirectly relate to the ICF model, just not aware if it correlates to what I am teaching." CI 31 and 33: "None." CI 26: "Unaware of any."
	Few CIs provide good learning experiences following the ICF model (14%).	CI 36: " We had an in-service on the transition to the ICF model that the students can review. We discuss case studies using this framework." CI 9: "First day orientation includes patient-centered care and the ICF model." CI 13: "There is an education series related to special topics relevant to the ICF model."

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APPENDIX C. *(continued)*

Theme	Code	Data
	ICF model used in clinical setting (5%).	CI 25: "I use it the most during evaluations and treatment plans. I use the ICF model in order to relate the referring diagnosis to the actual structures that may be involved and then to the bigger picture of functional and activity limitations. When developing a treatment plan I try and focus on what activity and/or functional limitations are the most important to the patient and how I can improve these with addressing the dysfunction of structures and body functions." CI 9: "I use it to address all aspects of function/disability to help provide a systematic approach to patient care. I use the model as a framework for classifying research evidence and use the terminology for teaching. Use it to teach collaborative practice and patient/family centered care, as well as management of musculoskeletal conditions in pediatrics physical therapy."
Most CIs perceive connection with or use FOM	66% CIs perceive connection of FOM w/ ICF model.	CI 1: "ICF model appears to be oriented to functional outcomes versus improving impairments (ie ROM, strength)." CI 5: "I would think that there is a strong correlation. Functional outcomes are determining a level of disability with which to focus treatment—I would assume that the ICF is very much the same." CI 11: "I would think there would be a high correlation because if you center treatment on how patients function at the participation/activity level, you will have better outcomes." CI 18: "Directly correlate." CI 6: "Functional outcome measures can be used to objectively show a patient's functional status and then utilized to show a patient's progress across the domains of the ICF." CI 20: "I feel that functional outcome measures can help assess if your treatment plan is addressing the functional limitations of the patient. It can give an objective measure to determine progress." CI 21: "Improved functional outcomes are in direct correlation with identifying the wants and needs of the patient."
	7% of CIs use FOMs, do not see connection w/ ICF model.	CI 38: "We use functional outcomes, but currently we don't use ICF model, so no connection." CI 37: "None—again—don't know what the ICF model is. We do, however, utilize outcome measures on every single patient that comes to our clinic."
	26% of CIs do not use FOMs and see no connection.	CI 6: "I do not use this model." CI 24: "Unable to answer." CI 26: "None."
	Students experiences most CIs used outcome measures for activity limitations because of the Medicare G codes. Only 2 students reported using a functional outcome measure for participation restriction. (10%).	Student 10: "… then we used the Canadian occupational performance measure and because of the facility I was at, it was required for every evaluation so I had to do that one which I felt was actually good because it looks that the patient's concerns and the family's concerns and you can get your goals off of it with what they're concerned about, so that actually helped."
	Students perceived many CIs did not use functional outcome measures (46%).	Student 5: "I had the 2 extremes of this. At one clinic the patient did not walk out of the facility without a functional outcome measure like the 6 min test, 4 quarter test. It was a lot easier to write your goals, and (b) you could see the progress they were making. Then in another clinic, no one did functional outcome measures. No matter what test it is you can help your patient see how they have progressed." Student 4: "… my impression regarding outpatient orthopedics is that functional outcome measures has not been integrated into their clinic." Student 1: ". . . In my SNF, no functional outcome measures," and Student 2: "My pediatric site was CCS: my clinical instructor said you can't because it has to come from higher up. We used the FISC to use as a common language. They don't have functional outcome measures at the MTU's but the clinical instructor's thought there may be some of the functional outcome measures for peds at the central office. My outpatient orthopedic clinic did not use functional outcome measures. In acute used the Berg on occasion. My clinical instructor wanted my help." Student 21: "… at the pediatric clinic I actually didn't see any outcome measures used but they did talk about how they wanted to use one for this one patient but they couldn't find the book."

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APPENDIX C. *(continued)*

Theme	Code	Data
Students are not assessed regarding the ICF model on the CPI.	Student perceived they are not assessed on the ICF model on the CPI	Students 1–22: "No."
	ICF was not assessed in the CPI evaluation by the CIs.	CI 21: "Students are not assessed regarding their use of the ICF model. The CPI does not specifically cover it, and the APTA clinical instructor credential program does not instruct CIs on how to incorporate the ICF model into the assessment tool. The 18 Performance Criterion the CPI covers are very broad and even in the examination, evaluation, assessment and outcome categories, the sample behaviors do not emphasize any of the domains of the ICF model" CI 6: "I think that there could be a couple of categories that more specifically address whether the student is able to incorporate the model into the daily evaluation and treatment routine." Analysis of the CPI documents for the entire cohort of PT students for term 6, Spring, 2013 revealed no mention of the ICF model in any comment section under Objectives 10 and 16 where the ICF is to be assessed as mentioned in the example behaviors on the CPI document. Example: "*Student* has been able to more consistently able to use Bedside Tests and measures for Balance, Vital Signs, and Strength in order to accurately gain a proper depiction of a patients functional ability at the time PLOC is being performed." Strengths: " 1: Uses all proper DME with patients she is familiar with. 2: Discusses PLOC with clinical instructor with more medically complicated patients." Areas for further development "1: Timely deliverance of Non-Verbal and Verbal Cues at times of patient confusion or inability to follow Verbal Cues.." And general comments: "Continue to improve on Social Skills to student's Patient and Family Members by holding simple relevant and non-relevant conversations. This allows Patients and other members to relax more around you, thus making it easier to engage your patient more and family less during Treatment sessions. Though always providing time to convey progression and other questions during a timelier manner." (CI and Student 1, CPI Data).
Barriers	CIs divided on their perception of the usefulness of the CPI.	CI 39: "Frankly, I think the CPI is a very lengthy, cumbersome and redundant tool even though it is thorough. In terms of resources to objectively evaluate students, I think the physical therapy school ACCE is largely responsible for communicating these resources are available to the clinician. On one occasion prior to the midterm evaluation, the ACCE provided me a one sheet print out of definitions of terms used in the CPI, which used ICF language. I believe the CPI website had this information as well, but the reinforcement to a busy clinician was most helpful. b) Yes, the CPI provided adequate resources to evaluate student skill in patient-centered care using ICF language and the school's clinical education liaison facilitated and thankfully reinforced them." CI 42: "I don't think the CPI specifically addresses the ICF model, although it does assess some aspects of it such as setting specific and relevant goals." CI 40: "My students are not assessed on their use of the ICF model. I do not use the CPI for evaluation of students with regards to the ICF model. But I could see how it could be included in the physical therapy diagnosis section of the CPI. I think there are multiple sections of the CPI that can grade a student on patient-centered care, such as, safety, interventions, education, etc." CI 30: 14% I do not know if CPI is sufficient to assess the use of the ICF model. "I don't assess my students regarding their use of the ICF model because I don't know it. a) I can evaluate my students well using the CPI. b) It touches on every area of practice that I can think about and leaves plenty of narrative space in case something was not covered."
	ICF is too subjective or categorical.	CI 7: "It seems very categorical and cold." CI 41: "I am most familiar with the ICF in discussions that I have had with a European physiotherapist. He works in both Belgium and Denmark and has related to me that each country interprets the ICF differently which makes treatment of patients difficult from a rehab standpoint. From these discussions, my perception of the ICF is that it is an attempt to classify disabilities, categories of injury and illness and direct treatment according to the patient's classification and category." CI 7: "I think they both relate to function, but the pt centered care gives a better rapport with the pt. I see how they both relate to function, but the ICF model tries to put the patient in a categorical box. Pt centered care sees the person and their family and treats them as individuals."

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APPENDIX C. *(continued)*

Theme	Code	Data
		CI 41: "My perception is the ICF is an attempt to classify patients in categories and therefore predict their rehab needs. Personally, I see patient centered care as an individual assessment and treatment plan that does not need categorization for success." CI 41: "Functional Outcome Measures are used to determine the level of disability or ability of the client with regard to their physical limitations. The outcomes of these assessments would be applicable to the ICF model in that the patient could be categorized with regard to their recovery and the focus of their care would be determined by that category within the ICF." CI 31: "To heavily reliant on patient subjective info." CI 2: "I think they help measure subjectivity." CI 31: "To heavily reliant on patient subjective info." CI 2: "I think they help measure subjectivity"
	Most clinics do not support the ICF model.	CI 41: "I have never read the document; I would say we do not support the ICF. I was never educated about the ICF in any clinical setting. I have been a private practice owner for 22 years, so blame cannot be put elsewhere." CI 28: "Our facility does not provide any education on this topic." CI 14: "In an outpatient private practice- there is little support entry level—no education Doctoral level—more education." CI 6: "To my knowledge, most of the providers in my facility are either unaware of the ICF model or chose not to use it. I do not remember being instructed in physical therapy school on how to effectively utilize the ICF model in practice." CI 38: "I have not been educated on how to use the ICF model here at my work. I feel they would support. But we are strictly guided by CMS guidelines and requirements, so if not required or recognized by CMS then they may not use."

BSF, body structure and function; CCS, California Children's Services; CMS, Centers for Medicare and Medicaid Services; CPI, clinical performance instrument; DME, durable medical equipment; FISC, family information and support center; FOM, functional outcome measure; MTUs, medical therapy unit; PLOC, prior level of care; SNF, skilled nursing facility.

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