

2009

Rehabilitation Counseling
Bulletin
Volume 52 Number 2
January 2009 95-106
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on Disabilities
10.1177/0034355208323646
<http://rcb.sagepub.com>
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<http://online.sagepub.com>

Essential Knowledge Domains Underlying Effective Rehabilitation Counseling Practice

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The purpose of this study was to identify and examine the major knowledge domains required for rehabilitation counseling practice across settings in today's rapidly changing practice environment. Data obtained and analyzed from a recent national study by the Commission on Rehabilitation Counselor Certification (CRCC) is reported and reviewed in detail. Specific implications for knowledge translation of the study's finding for practitioner certification and academic program accreditation are identified.

Keywords: *rehabilitation counseling competencies; essential knowledge and skills; role and function research; empirical foundation of practice*

Changes in service delivery systems and practice settings are an important ongoing challenge facing the profession and practice of rehabilitation counseling (Shaw, Leahy, Chan, & Catalano, 2006). These changes include new knowledge generation and translation, emerging disability populations, federal legislative mandates, changes in the managed care movement in health care, and licensure in the field of counseling. As these settings and service delivery systems change, so do the required job functions, tasks, and competencies of the rehabilitation counselor. Recognizing and understanding these changes is instrumental in developing and maintaining valid standards for educational (curriculum) program accreditation, national certification, and for ensuring that new graduates and experienced rehabilitation counselors are well equipped to perform in and navigate this ever-changing service delivery landscape.

Over the years, an extensive body of empirically based knowledge has been acquired through various research methods (e.g., job analysis, role and function, professional competency, and critical incident approaches) that have identified and defined the specific competencies and job functions important to the practice of rehabilitation counseling and the achievement of

positive outcomes with the consumers they serve (Leahy, Chan, & Saunders, 2003). In these studies, researchers have sought to more fully understand the role of the rehabilitation counselor in terms of what they do in practice by focusing on the specific job functions and tasks performed by rehabilitation counselors to achieve successful outcomes with persons with disabilities. They have also addressed issues related to differences in function in importance and frequency of application in relation to practice settings and counselor characteristics. Researchers have also studied the underlying knowledge domains that are required in order to perform these essential job functions associated with the role and have examined these professional competencies in relation to their importance, practitioner preparation and attainment, and any differences in these variables of interest in relation to practice settings and counselor characteristics.

In the earlier years of the discipline, studies like these were used by the regulatory bodies to help inform

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standards developed in the areas of academic program accreditation and practitioner certification (e.g., Berven, 1979; Emener & Rubin, 1980; Harrison & Lee, 1979; Jaques, 1959; Leahy, Shapson, & Wright, 1987; Muthard & Salamone, 1969; Rubin et al., 1984; Wright & Fraser, 1975). In more recent years, the explicit connection and knowledge translation between empirical research and standard setting by the discipline's regulatory bodies has significantly evolved. For example, Szymanski and Leahy (1993) developed a collaborative national research project 15 years ago that was sponsored by the Council on Rehabilitation Education (CORE), the Commission on Rehabilitation Counselor Certification (CRCC), the American Rehabilitation Counseling Association (ARCA), and the National Rehabilitation Counseling Association (NRCA). Findings from this study (Leahy, Szymanski, & Linkowski, 1993) were directly translated by the discipline's regulatory bodies in order to validate knowledge standards for academic program accreditation by CORE and in designing an empirically based set of test specifications for practitioner certification by CRCC. A few years later, CRCC sponsored another study that was completed in 2001, which examined both the major knowledge domains and job functions associated with effective rehabilitation counseling practice and outcomes (Leahy et al., 2001, 2003). Both CORE and CRCC used the findings from this national study in order to revise national curriculum content standards and to revise the blueprint for the *Certified Rehabilitation Counselor Examination (CRCE)*.

In this most recent examination of rehabilitation counselor competencies and job functions by Leahy et al. (2003), seven major job functions (vocational counseling and consultation, counseling intervention, community-based rehabilitation service activities, case management, applied research, assessment, and professional advocacy) and six knowledge domains (career counseling, assessment, and consultation; counseling theories, techniques, and applications; rehabilitation services and resources; case and caseload management; health care and disability systems; and medical, functional, and environmental implications of disability) were identified. CRCC, in using these results for the development of the current test specifications of the CRCE, combined the major domains and subdomains to give the specifications a 12-domain organizational schema.

In the years that have passed since the last knowledge validation and role and function study, service settings have continued to diversify and the delivery of services has continued to evolve to address not only the changing needs of persons with disabilities but also to keep pace

with advances in medicine, technology, and new knowledge generation and application in practice settings. Consequently, recognizing and understanding changes is important and consistent with the accreditation requirements that CRCC regularly study and review the test specifications used to guide the certification examination. This study, which was sponsored by the CRCC, will be used to set test specifications for future examinations and may also be used by the discipline to update the pre-service curriculum, make revisions in the scope of practice, and inform future accreditation standards revision initiatives.

Therefore, the purpose of the study was to collect and analyze data for decision making in regard to the test specifications of the certification examination. A Web-based validation survey was designed using the *Knowledge Validation Inventory-Revised (KVI-R)*; Leahy et al., 2003) to collect information from certified rehabilitation counselors (CRCs) regarding various knowledge domains and subdomains in relation to their importance, frequency of use, and at what point in the professional development process they should be acquired. This research represents a replication and extension of recent efforts (Leahy et al., 1993, 2003). The research design for the present study includes both descriptive and ex post facto approaches. The descriptive approach involves the use of principal axis factor analysis (also known as common factor analysis) as a data reduction technique to examine the factor structure underlying major knowledge domains essential to the practice of rehabilitation counseling. The ex post facto portion of the study includes comparisons of factor scores across a number of employment (practice) settings. Post hoc analyses were only performed when a MANOVA was significant. Only comparisons that were significant at the Bonferroni-corrected alpha level are reported. The research questions addressed in the study were as follows:

Research Question 1: How important are the various knowledge domains for certified rehabilitation counselors in relation to optimizing outcomes for rehabilitation clients?

Research Question 2: How frequently have these knowledge domains been used by certified rehabilitation counselors in the past year?

Research Question 3: At what point in the educational and professional development process should the rehabilitation counselor acquire each knowledge domain?

Method

Participants

Potential survey participants were 2,400 CRC certificants randomly selected from the population of CRCs with e-mail addresses on file in the CRCC database. The demographic characteristics of certificants with and without e-mail addresses were evaluated and found to be comparable. A total of 648 CRCs completed the survey for a 39% return rate. A total of 765 survey invitations were undeliverable due to bad e-mail addresses, yielding an adjusted sample size of 1,671.

More than one third (35%) of the participants held the job title of *rehabilitation counselor*, 13% held the title of *rehabilitation consultant/specialist*, 8% each held the title of *supervisor* (rehab staff) and *administrator*, 3% were *university educators*, and 2% were *vocational educators*. The remaining 31% held a variety of other job titles. The largest category of employer of the participants was state-federal rehabilitation agencies (33%), followed by private (proprietary) rehabilitation companies (17%), private practice (10%), private nonprofit rehabilitation facilities (7%), colleges or universities (6%), insurance companies (4%), and K-12 schools (3%). The remaining 20% worked for a variety of employers represented by the *other* category. With respect to employment sector, 35% worked for for-profit organizations, 15% worked for nonprofit organizations, 43% worked for governmental agencies, and 7% worked in other sectors. Participants had an average of 17.7 years of experience in the field. In addition, 83% held a master's degree, 7% held a doctorate, 4% held a bachelor's degree, and 1% held some other degree. Finally, 73% were female and 27% were male.

Instrumentation

A two-phase approach was used to conduct the study. In the first phase, a Job Analysis Task Force (JATF) of subject matter experts, which included rehabilitation counselors, rehabilitation educators, and researchers, was utilized to update the instrument's (KVI-R) organizing structure of knowledge domains and subdomains. The second phase consisted of a large-scale national validation survey based on the outline of domains developed by the JATF. The CRCC Examination and Research Committee (ERC) provided conceptual guidance and oversight for this portion of the study. Researchers from the Professional Examination Service (PES) conducted individual telephone interviews with each member of the ERC to gather feedback and information regarding potential overlaps among the current 12 domain areas of

the instrument, areas of strength and weakness of the current structure, and changes in practice that might influence the required knowledge base for CRCs. The results of these interviews were used in the instrument review and revision process.

Next, a 10-member JATF panel was developed, emphasizing the need for a diverse review panel in terms of racial/ethnic diversity, work settings, and geographic regions. This task force met on several occasions and brainstormed changes in practice, reviewed the results of the ERC interviews, and then, using a modified nominal group process technique, reviewed and revised the knowledge domains and subdomains.

The revised knowledge domains and subdomains were then circulated to 25 external reviewers for review and comment. These reviewers were asked to evaluate the domains for completeness, redundancy, clarity, consistency, and sequence. As a result of these review efforts, the survey instrument represented an updated version of the *Knowledge Validation Inventory-Revised* (Leahy et al., 2001, 2003). The final version of the instrument contained 81 knowledge subdomains, which were updated and consolidated from the original 90 subdomains represented in the KVI-R to reflect current practice in the profession. The 81 knowledge subdomains were organized within the 12 knowledge domains that form the basis for the CRC examination. These 12 domains emerged from factor-analytic exploration of the importance ratings of job incumbents in the most recent job analysis survey of the knowledge requirements for the profession (Leahy et al., 2003).

The survey was designed to collect ratings from CRCs with respect to the 12 knowledge domains and 81 subdomains. Respondents were asked to rate the importance of each knowledge domain on a 4-point Likert scale (1 = *not important*, 2 = *minimally important*, 3 = *moderately important*, and 4 = *highly important*) and to indicate the frequency with which they used the knowledge domain on a 5-point Likert scale (1 = *never*, 2 = *yearly or almost yearly*, 3 = *monthly or almost monthly*, 4 = *weekly or almost weekly*, and 5 = *daily or almost daily*). Three scales were designed to collect data regarding each of the 81 knowledge subdomains. Importance and frequency scales for the subdomains used the same ratings as those used to rate the knowledge domains. A third scale addressed the point at which practitioners should acquire the knowledge. The 3-scale Likert points were: 1 = *never*, 2 = *during formal education/practicum/internship*, and 3 = *on the job*. The instrument also included a demographic and professional background questionnaire describing characteristics of the survey respondents.

Procedures

Because the task force felt that asking respondents to make three ratings for each knowledge subdomain might cause an undue burden on participants, and thus lower the response rate, two versions of the survey were created, each with two rating scales. Since the *Importance* ratings were judged to be most crucial to determining *Certified Rehabilitation Counselor Examination* test content, respondents to both versions of the survey were asked to make the importance ratings. In addition, Version 1 contained the *Frequency* rating scale and Version 2 contained the *Acquisition* rating scale. Both versions contained the domain ratings and the demographic questionnaire. Survey invitations were disseminated via e-mail. Reminder messages were sent 1 week after the original invitations.

Results

Major Knowledge Domains

Mean importance and frequency ratings for the 12 major knowledge domains are displayed in Table 1. All but 1 knowledge domain, Group and Family Counseling, were rated moderately important or higher. The most important knowledge domains were Medical, Functional, and Environmental Aspects of Disabilities and Case and Caseload Management. These two domains of knowledge were also used the most frequently (weekly to daily). Knowledge related to Group and Family Counseling was used least frequently (monthly to yearly on average). Standard deviations around the mean ratings are much larger for the frequency ratings than the importance ratings, suggesting that while the actual frequency of knowledge use may differ among the respondent group, perceptions regarding the importance of the knowledge areas are similar.

Exploratory factor analysis was run on both the importance and the frequency ratings for the 12 knowledge domains (principal axis with varimax rotation). Similar three-factor solutions emerged in both analyses. The importance ratings analysis accounted for 54% of the variance, and the frequency ratings analysis accounted for 60% of the variance.

For importance, the first factor, Counseling Knowledge, consisted of four knowledge domains: Individual Counseling, Group Counseling, Mental Health Counseling, and Psychosocial and Cultural Issues in Counseling. The coefficient alpha computed for the total sample was .71, and the average interitem correlation was .45. The mean perceived importance ratings for

this factor was 3.6 ($SD = .26$). Factor 2, Vocational Knowledge, consisted of three knowledge domains: Career Counseling and Assessment, Job Development and Placement Services, and Vocational Consultation and Services for Employers. The coefficient alpha computed for the total sample was .75, and the average interitem correlation was .43. The mean perceived importance ratings for this factor was 3.3 ($SD = .35$). Factor 3, Core Knowledge, consisted of five knowledge domains: Medical, Functional, and Environmental Aspects of Disabilities; Foundations, Ethics, and Professional Issues; Rehabilitation Service and Resources; Health Care and Disability Issues; and Case and Caseload Management. The coefficient alpha computed for the total sample was .65, and the average interitem correlation was .27. The mean perceived importance ratings for this factor was 3.7 ($SD = .18$). In the frequency analysis, the order of the factors differed. Factor 1 was Vocational Knowledge, Factor 2 was Counseling Knowledge, and Factor 3 was Core Knowledge. The identical knowledge domains loaded on the factors as in the importance analysis.

The relative importance of knowledge domain ratings across practice settings was also explored. A MANOVA was conducted using the same seven categories of work setting as in Leahy et al. (2003) to facilitate comparisons. The omnibus F test indicated significant differences in importance ratings across work settings, Wilks's Lambda = .01, $F(12, 589) = 3577.98$, $p < .001$.

Univariate ANOVAs indicated that importance ratings differed significantly in 8 of the 12 knowledge areas. Of these areas, 3 were in counseling-related knowledge domains. Knowledge related to Group and Family Counseling was rated more important by respondents at mental health centers and psychiatric hospitals ($M = 3.5$) than by respondents in state-federal rehabilitation agencies ($M = 2.8$), private (proprietary) rehabilitation companies ($M = 2.5$), and other settings ($M = 2.9$). This knowledge was also rated more important by respondents in college and university settings ($M = 3.3$) than by respondents in state-federal rehabilitation agencies and private (proprietary) rehabilitation companies. Mental Health Counseling knowledge was rated more important by respondents in state-federal rehabilitation agencies ($M = 3.5$), private nonprofit rehabilitation facilities ($M = 3.5$), colleges and universities ($M = 3.7$), mental health centers and psychiatric hospitals ($M = 3.9$), and K-12 schools ($M = 3.8$) than by respondents in private (proprietary) rehabilitation companies ($M = 2.9$). Knowledge related to Psychosocial and Cultural Issues in Counseling was rated more important by respondents working in state-federal rehabilitation agencies ($M = 3.4$)

Table 1
Importance and Frequency Ratings for Knowledge Domains

Knowledge Domain	Importance			Frequency of Use		
	<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Counseling Knowledge						
Individual Counseling	643	3.7	.5	641	4.2	1.1
Group and Family Counseling	640	2.9	.9	643	2.5	1.2
Mental Health Counseling	642	3.4	.8	640	3.4	1.4
Psychosocial and Cultural Issues in Counseling	642	3.4	.7	642	3.5	1.2
Vocational Knowledge						
Career Counseling and Assessment	640	3.7	.5	643	4.1	1.1
Job Development and Placement Services	639	3.7	.6	643	3.8	1.3
Vocational Consultation and Services for Employers	641	3.3	.8	643	3.0	1.2
Core Rehabilitation Knowledge						
Case and Caseload Management	642	3.8	.5	640	4.6	1.0
Medical, Functional, and Environmental Aspects of Disabilities	644	3.8	.4	642	4.4	0.9
Foundations, Ethics, and Professional Issues	639	3.6	.6	642	4.1	1.1
Rehabilitation Services and Resources	639	3.7	.5	640	4.2	1.0
Health Care and Disability Systems	643	3.4	.7	643	3.6	1.1

and colleges and universities ($M = 3.7$) than by respondents at private (proprietary) rehabilitation companies ($M = 3.1$).

Setting-related differences emerged for two of the vocational knowledge domains. The mean importance rating for Career Counseling and Assessment was significantly lower for respondents in other settings ($M = 3.7$) than for respondents in the remaining work settings. Job Development and Placement knowledge was rated significantly more important by respondents at state-federal rehabilitation agencies ($M = 3.8$) and private (proprietary) rehabilitation companies ($M = 3.7$) than at K-12 school settings ($M = 3.2$).

Setting-related importance rating differences emerged for three of the five core knowledge domains. Case and Caseload Management knowledge was rated more important by respondents working in state-federal rehabilitation agencies ($M = 3.9$) than by respondents working in private nonprofit rehabilitation facilities ($M = 3.3$), mental health centers ($M = 3.5$), or K-12 schools ($M = 3.5$). Medical, Functional, and Environmental Aspects of Disabilities was rated more important by respondents in state-federal rehabilitation agencies ($M = 3.8$) and other settings ($M = 3.8$) than by respondents in K-12 schools ($M = 3.4$). Knowledge of Rehabilitation Services and Resources was rated more important by respondents in state-federal rehabilitation agencies ($M = 3.9$) than respondents in other settings ($M = 3.5$). There were no

significant work setting differences for 4 of the 12 knowledge areas: Individual Counseling; Vocational Consultation and Services for Employers; Foundations, Ethics, and Professional Issues; and Health Care and Disability Issues.

A second multivariate analysis explored the frequency of knowledge use across settings. Similar, but not identical differences emerged. Univariate ANOVA following a significant overall F test, Wilks's Lambda = .05, $F(12, 597) = 888.83$, $p < .001$, indicated that the frequency of knowledge use varied significantly across settings for 10 of the 12 domains.

There were significant work setting differences in frequency ratings for three of the four counseling-related knowledge domains, the same three for which important differences were found. Knowledge related to Group and Family Counseling was used more frequently by respondents at mental health centers and psychiatric hospitals ($M = 3.6$) and K-12 schools ($M = 4.6$) than by respondents in state-federal rehabilitation agencies ($M = 2.5$), private (proprietary) rehabilitation companies ($M = 2.2$), and other settings ($M = 2.5$). Respondents in mental health centers and psychiatric hospitals also used this knowledge more frequently than respondents in college and university settings ($M = 2.6$). Mental Health Counseling knowledge was used more frequently in mental health centers and psychiatric hospitals ($M = 4.6$) than by respondents in state-federal rehabilitation agencies ($M = 3.6$), private nonprofit

rehabilitation facilities ($M = 3.5$), private (proprietary) rehabilitation companies ($M = 2.7$), and "other" settings ($M = 3.3$). Respondents in private (proprietary) companies used knowledge of mental health counseling least—in addition to using it less than respondents in mental health settings, they used it less than respondents in state-federal rehabilitation agencies, colleges and universities ($M = 3.6$), K-12 schools ($M = 4.2$), and other settings. While the univariate ANOVA was significant for Psychosocial and Cultural Issues in Counseling, none of the individual comparisons was significant.

Setting-related differences emerged in the frequency of use of all three vocational knowledge domains. The mean importance rating for Career Counseling and Assessment was significantly higher for respondents in state-federal rehabilitation agencies ($M = 4.4$) than for respondents in colleges and universities ($M = 3.6$), mental health centers and psychiatric hospitals ($M = 3.6$), K-12 schools ($M = 3.2$), and other settings ($M = 3.9$). This knowledge was also used more frequently by respondents in private (proprietary) rehabilitation companies ($M = 4.2$) than by respondents in K-12 schools. Job Development and Placement knowledge was rated significantly more important by respondents at state-federal rehabilitation agencies ($M = 4.2$) and private (proprietary) rehabilitation companies ($M = 4.0$) than by respondents at college and university settings ($M = 3.2$), mental health centers and psychiatric hospitals ($M = 3.0$), K-12 schools ($M = 2.8$), and other settings ($M = 3.4$). Knowledge related to Vocational Consultation and Services for Employers was used more frequently by respondents at state-federal rehabilitation agencies ($M = 3.9$), private (proprietary) rehabilitation companies ($M = 3.3$), and other settings ($M = 3.0$) than at mental health centers and psychiatric hospitals ($M = 2.1$).

There were practice setting differences in the frequency of use of four of the five core knowledge domains. Case and Caseload Management knowledge was used more frequently by respondents located at state-federal rehabilitation agencies ($M = 4.8$) than by respondents at colleges and universities ($M = 4.0$), mental health centers and psychiatric hospitals ($M = 4.0$), and other settings ($M = 4.4$). This knowledge was also used more often by respondents at private (proprietary) rehabilitation companies ($M = 4.6$) than respondents in college and university settings. Knowledge of the Medical, Functional, and Environmental Aspects of Disabilities was used more frequently by respondents at private (proprietary) rehabilitation companies ($M = 4.5$) than at K-12 schools ($M = 3.7$). Knowledge of Rehabilitation

Services and Resources was used more frequently by respondents working at state and federal rehabilitation agencies ($M = 4.6$) than at college/university settings ($M = 3.9$), K-12-schools ($M = 3.7$), and other settings ($M = 4.0$). Health Care and Disability Systems knowledge was used more frequently by respondents at other settings ($M = 3.9$) than by respondents at state-federal rehabilitation agencies ($M = 3.5$) or colleges and universities ($M = 3.3$). There were no differences in the frequency of use of the knowledge domains of Individual Counseling or Foundations, Ethics, and Professional Issues.

Knowledge Subdomains

The mean importance and frequency ratings for the 81 knowledge subdomains are shown in Table 2, along with the percentage of respondents indicating the knowledge subdomain should be acquired primarily during preservice education versus on the job. A total of 67 of the 81 knowledge subdomains were rated moderately important ($M = 3.0$) or higher to optimizing outcomes for rehabilitation clients, and the remaining 14 were rated minimally to moderately important ($M = 2.5$ – 2.9). The most important knowledge subdomains ($M = 3.9$) were functional capacities of individuals with physical, psychiatric, and/or cognitive disabilities and vocational implications of functional limitations. The second most important knowledge subdomains ($M = 3.8$) were medical aspects and implications of various disabilities; ethical standards for rehabilitation counselors; professional roles, responsibilities, functions, and relationships with clients and other human service providers; and case management process. The least important knowledge subdomains were group counseling theories and interpretation and application of research findings ($M = 2.7$).

Respondents used 15 knowledge subdomains at least weekly ($M = 4.0$), 43 at least monthly ($M = 3.0$), and 23 at least yearly ($M = 2.0$). Most of the knowledge subdomains rated most important were also rated highest in terms of frequency of use. The most frequently used knowledge subdomain ($M = 4.6$) was principles of caseload management. The next most frequently used knowledge subdomains ($M = 3.9$) were functional capacities of individuals with physical, psychiatric, and/or cognitive disabilities; medical aspects and implications of various disabilities; professional roles, responsibilities, functions, and relationships with clients and other human service providers; and the case management process. The least frequently used knowledge was forensic rehabilitation services ($M = 2.2$).

Table 2
Summary of Knowledge Subdomain Ratings

Knowledge Subdomain	Importance		Frequency		Acquisition During Education
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	%
Individual Counseling					
Individual counseling theories	3.2	.77	3.7	1.32	98
Individual counseling practices and interventions	3.6	.62	4.2	1.08	89
Behavior and personality theory	3.3	.73	3.7	1.25	98
Human growth and development	3.1	.80	3.4	1.27	99
Multicultural counseling issues related to individual counseling	3.4	.70	3.6	1.22	91
Cronbach's alpha = .86					
Group and Family Counseling					
Family counseling theories	2.8	.87	2.5	1.19	97
Family counseling practices and interventions	2.8	.90	2.5	1.16	91
Group counseling theories	2.7	.91	2.3	1.21	97
Group counseling practices and interventions	2.8	.94	2.3	1.23	90
Multicultural counseling issues related to group and family counseling	2.9	.92	2.5	1.28	90
Cronbach's alpha = .93					
Mental Health Counseling					
<i>Diagnostic and Statistical Manual of Mental Disorders IV-TR</i>	3.2	.82	3.2	1.26	91
Rehabilitation techniques for individuals with psychiatric disabilities	3.6	.60	3.6	1.21	86
Multicultural counseling issues related to mental health counseling	3.3	.77	3.1	1.29	88
Implications of medications as they apply to individuals with psychiatric disabilities	3.6	.61	3.7	1.17	77
Dual diagnosis	3.5	.68	3.5	1.23	86
Substance abuse	3.6	.63	3.6	1.15	89
Treatment planning	3.4	.74	3.4	1.29	75
Wellness and illness prevention concepts and strategies	3.1	.85	3.1	1.31	79
Cronbach's alpha = .87					
Psychosocial and Cultural Issues in Counseling					
Individual and family adjustment to disability	3.6	.60	3.7	1.12	86
Psychosocial and cultural impact of disability on the individual	3.6	.59	3.8	1.13	91
Psychosocial and cultural impact of disability on the family	3.3	.72	3.1	1.15	89
Attitudinal barriers for individuals with disabilities	3.6	.58	4.0	1.05	86
Societal issues, trends, and developments as they relate to rehabilitation	3.3	.71	3.2	1.15	82
Working with individuals from various socioeconomic backgrounds	3.5	.65	4.1	1.10	67
Working with individuals with English as a second language	3.1	.81	2.8	1.23	59
Gender issues	2.9	.83	2.8	1.21	85
Human sexuality and disability issues	2.8	.85	2.4	1.08	90
Cronbach's alpha = .88					
Career Counseling and Assessment					
Theories of career development and work adjustment	3.2	.75	3.3	1.23	94
Tests and evaluation techniques for assessing clients	3.5	.64	3.5	1.08	90
Psychometric concepts related to measurement (e.g., reliability, validity, standard error of measurement)	2.9	.88	2.7	1.14	97
Interpretation of assessment results for rehabilitation planning purposes	3.7	.52	3.8	1.04	75
Computer- and Internet-based career resources (e.g., OASYS, O*NET, Job Accommodation Network [JAN])	3.4	.72	3.6	1.23	58
Transferable skills analysis	3.6	.65	3.6	1.12	68
Assistive technology	3.4	.69	3.1	1.03	56
Cronbach's alpha = .70					
Job Development and Placement Services					
Vocational implications of functional limitations	3.9	.41	4.3	1.04	72
Job readiness, including seeking and retention skills	3.7	.55	4.0	1.09	56
Techniques used to conduct labor market surveys	3.0	.84	2.9	1.24	58

(continued)

Table 2 (continued)

Knowledge Subdomain	Importance		Frequency		Acquisition During Education
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	%
Occupational and labor market information (including but not limited to local/state/national, rural/urban)	3.3	.72	3.5	1.23	50
Job matching strategies	3.5	.65	3.7	1.16	70
Employer development for job placement	3.4	.72	3.1	1.21	35
Employment support services (including but not limited to supported employment, work adjustment, job coaching, on-the-job training, follow-up/follow along/job maintenance, postemployment)	3.6	.64	3.4	1.26	54
Employment settings (including but not limited to competitive, supported)	3.3	.75	3.4	1.28	59
Cronbach's alpha = .79					
Vocational Consultation and Services for Employers					
Employer practices that affect the employment or return to work of individuals with disabilities	3.5	.69	3.2	1.16	53
Marketing rehabilitation services and benefits for employers (including but not limited to financial incentives, federal and state tax credits, welfare to work credits)	3.2	.77	2.7	1.11	41
Educating employers on disability-related issues (including but not limited to enhancing workplace culture and environment, Americans with Disabilities Act [ADA] compliance/disability law)	3.4	.72	2.8	1.12	57
Disability prevention and management strategies	3.0	.82	2.5	1.14	69
Job analysis and/or job description development	3.4	.75	3.1	1.21	77
Job modification, accommodation, and restructuring, including ergonomic assessment	3.5	.67	3.0	1.10	68
Work conditioning or work hardening resources and strategies	3.1	.76	2.8	1.11	53
Cronbach's alpha = .83					
Case and Caseload Management					
Case management process, including rehabilitation planning, service coordination, and referral to and collaboration with other disciplines	3.8	.45	4.5	0.95	63
Principles of caseload management, including case recording and documentation	3.7	.53	4.6	0.98	64
Professional roles, responsibilities, functions, and relationships with clients and other human service providers	3.8	.50	4.5	0.90	71
Negotiation, mediation, and conflict resolution strategies	3.5	.67	3.9	1.14	64
Techniques for working effectively in teams and across disciplines	3.6	.64	4.2	1.07	55
Cronbach's alpha = .80					
Medical, Functional, and Environmental Aspects of Disabilities					
Medical aspects and implications of various disabilities	3.8	.37	4.5	0.87	93
Medical terminology	3.7	.52	4.4	0.87	89
Implications of medications as they relate to vocational goals and outcomes	3.7	.48	4.2	0.92	73
Functional capacities of individuals with physical, psychiatric, and/or cognitive disabilities	3.9	.34	4.5	0.84	77
Environmental barriers for individuals with disabilities	3.6	.58	3.9	1.06	80
Rehabilitation terminology and concepts	3.7	.58	4.3	1.02	96
Cronbach's alpha = .80					
Foundations, Ethics, and Professional Issues					
Philosophical foundations of rehabilitation	2.9	.83	2.8	1.36	99
Legislation or laws affecting individuals with disabilities	3.5	.63	3.3	1.09	88
Ethical decision-making models and processes	3.6	.61	3.9	1.14	92
Ethical standards for rehabilitation counselors	3.8	.45	4.3	1.11	88
Advocacy for individuals with disabilities	3.6	.64	3.9	1.19	68
Theories and techniques for providing clinical supervision	2.8	.90	2.3	1.29	72

(continued)

Table 2 (continued)

Knowledge Subdomain	Importance		Frequency		Acquisition During Education
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	%
Interpretation and application of research findings	2.7	.86	2.4	1.08	92
Evaluation procedures for assessing the effectiveness of rehabilitation services, programs, and outcomes	3.1	.84	2.6	1.19	71
Cronbach's alpha = .81					
Rehabilitation Services and Resources					
Financial support/funding resources for rehabilitation services and programs (including but not limited to supported employment, school-to-work, assistive technology)	3.5	.69	3.4	1.32	40
Organizations/programs providing rehabilitation services (including but not limited to federal/state/provincial vocational rehabilitation, community-based and private agencies)	3.6	.59	3.7	1.14	46
Community referral resources and services for rehabilitation planning (including but not limited to support groups, education programs, emergency services, transportation)	3.6	.59	3.8	1.11	28
Services available from one-stop career centers	3.2	.80	3.2	1.30	34
Services available from rehabilitation engineers	3.0	.83	2.3	0.98	44
Services available through client advocacy programs (including but not limited to Client Assistance Program [CAP], legal aid)	3.1	.79	2.5	1.02	40
Programs for specialty populations (including but not limited to school-to-work transition, spinal cord injury, traumatic brain injury, mental health, developmental disability, substance abuse, correctional)	3.5	.67	3.3	1.23	45
Forensic rehabilitation services (including but not limited to expert testimony, evaluating earnings capacity and loss, life-care planning)	2.9	.89	2.2	1.23	58
Cronbach's alpha = .82					
Health Care and Disability Systems					
Managed care concepts (including but not limited to PPO, HMO, POS, provincial/territorial health insurance programs)	2.8	.88	2.6	1.27	52
Insurance programs (including but not limited to Medicare, Medicaid, group and individual, short- and long-term disability, personal injury/no-fault liability)	3.2	.80	3.4	1.25	58
Health care benefits (including but not limited to prescription plans, extended health benefits)	2.9	.83	2.8	1.19	45
Workers' compensation laws and practices	3.3	.76	3.1	1.35	63
Social Security programs, benefits, work incentives, and disincentives	3.6	.62	3.7	1.15	62
Cronbach's alpha = .80					

Ratings regarding the point at which the different knowledge subdomains should be acquired varied, ranging from 32% for acquisition during training for community referral resources and services for rehabilitation planning to 98% for acquisition during training for behavior and personality theory. There were 22 knowledge

subdomains for which ratings were fairly evenly divided between acquisition during training versus on the job (i.e., in the 40%–60% range for acquisition during training); 11 were in the Vocational knowledge cluster and 9 were in the Core knowledge cluster. Of these, 6 related to the Rehabilitation Services domain.

Discussion

Evidence-Based Foundation

The results of this study provide empirical support for the description of the knowledge base underlying the practice of rehabilitation counseling and contributes further empirical evidence in relation to the content and construct validity of the knowledge domains identified in this replication and extension of the most recent study completed in 2003 (Leahy et al., 2003). Over the past 15 years, including the present study, there have been three, large-scale national research initiatives (Leahy et al., 1993, 2003; Szymanski, Linkowski, Leahy, Diamond, & Thoreson, 1993) that have identified and defined the specific competencies and job functions important to the practice of rehabilitation counseling and the achievement of positive outcomes with the consumers they serve. These last three studies have sampled the same population of interest and used parallel definitions of variables, research questions, and research instruments (KVI-R and the *Rehabilitation Skills Inventory-Revised*, RSI-R, Leahy et al., 2003). Each successive replication and extension of this line of inquiry has added to the evidence-based (DePalma, 2002) foundation of underlying knowledge dimensions essential for rehabilitation counseling practice. These studies and prior research efforts (e.g., Berven, 1979; Emener & Rubin, 1980; Harrison & Lee, 1979; Jaques, 1959; Leahy et al., 1987; Muthard & Salamone, 1969; Rubin et al., 1984; Wright & Fraser, 1975) have provided the discipline with consistent empirically based evidence of an established and mature profession that is able to respond appropriately to the evolutionary demands and pressures of a dynamic human service field.

Relationship With Prior Research

The results obtained in this study are slightly different from the 12 knowledge domains obtained in the last major national study in this area (Leahy et al., 2003), which CRCC presently uses as the test specifications for the current certification examination. The results of this current study identified three major factors related to rehabilitation counseling reflecting critical knowledge in the areas of Counseling, Vocational, and Core Rehabilitation areas. For each major factor, domains and subdomains were identified that reflect more refined knowledge important to the provision of rehabilitation counseling services. Specifically, the Counseling Knowledge factor consisted of four domains, Vocational Knowledge consisted of three domains, and the Core Knowledge domain consisted of five domains. Although organized differently from the most recent knowledge validation and function

study (Leahy et al., 2003), the critical knowledge identified as being needed to successfully perform the job has remained stable. The difference in organization may be a function of the slightly different methodological approach utilized in this study that relied on input from a panel of 10 content experts. Other key differences related to the current study is that the surveys were distributed and recorded through the Internet, and the scale for rating importance was modified from a 5-point scale to a 4-point scale. The impact of this new delivery platform on the types of individuals responding and their responses to the items is unknown.

In addition to obtaining information regarding importance and frequency of knowledge domains, this study obtained new information regarding the point in the educational and professional development process at which rehabilitation counselors should acquire each knowledge domain. Although there are some general limitations to these data in relation to how the variables were defined and subsequently analyzed, this new information can provide some insight into when rehabilitation counseling professionals should obtain the critical knowledge needed to perform the required job duties of a rehabilitation counselor. Preservice, in-service, and continuing educational training programs and rehabilitation professional organizations can use this acquisition information to assist educational efforts focused on enhancing rehabilitation counseling professional development.

Knowledge Domains and Subdomains

This study included all of the previously defined knowledge items and organized them into three factors, 12 domains, and 81 subdomains. This configuration of factors, domains, and subdomains is consistent with prior research (Leahy et al., 2003) and provides a usable model identifying critical knowledge dimensions while simultaneously detailing importance and frequency. Identifying the broader factors that are expanded to include specific domains and subdomains allows for rehabilitation educators and policy makers to clearly define the scope and practice of rehabilitation counseling in the ever-changing human service field while providing educators with detailed information that allows for the training of highly effective rehabilitation counseling practitioners. In terms of importance, all three factors and 11 of the 12 subdomains had mean importance scores that CRCs viewed as at least moderately important. The only domain score that did not have a score above the mean of 3.0 was the Group and Family Counseling, which obtained a mean score of 2.9 and can also be identified as a moderate level of importance.

In terms of frequency, the only domain that did not receive a mean score higher than 3.0 was Group and Family Counseling, which received a mean score of 2.5. This would suggest that the rehabilitation counselors did not use this knowledge domain more than a couple of times a year. In comparison, rehabilitation counselors participating in this study indicated that they used six knowledge domains (Individual Counseling, 4.2; Career Counseling and Assessment, 4.1; Medical and Functional Aspects of Disabilities, 4.4; Foundations, Ethics, and Professional Issues, 4.1; Rehabilitation Services and Resources, 4.2; and Work Environment Case Load Management, 4.6) at least weekly. The frequency in which the identified domains are utilized provides further support regarding the complexity and diversity of the skill set that is needed in the provision of rehabilitation counseling services.

Setting-Related Differences in Knowledge Importance

The importance ratings for the specific domains were examined across employment settings with differences found in 8 of the 12 domain areas. Therefore, the employment setting of rehabilitation counselor did appear to impact the perceived importance of specific domains. Although each of the knowledge domains was rated by participants as important to effective rehabilitation counseling services, the differences noted between practice setting obtained in this study are consistent with the findings from previous studies and has been consistently reported in the literature (Leahy et al., 1987, 1993, 2003; Rubin et al., 1984). The differences appear to be logical and related to the unique requirements of the practice setting, overall mission of the agency, anticipated rehabilitation outcomes, and characteristics of the population served.

Frequency of Knowledge Application by Practice Setting

Like the previous studies that have examined rehabilitation counselor role and function, rehabilitation counselors reported the frequency in which they used specific knowledge domain to perform their work as a rehabilitation counselor. These data indicate that the most frequently used factor was Vocational Knowledge followed by Counseling Knowledge and Core Rehabilitation Knowledge. Differences in frequency of domain use by setting were also noted in this particular study. The results of this study provide further description and clarification of how rehabilitation counselors allocate their time across practice settings and proportionally divide their time on a daily basis.

Limitations

The findings from this study should be viewed and applied within the context of several limitations. Although random selection of participants strengthened the generalizability of these findings, only individuals who were currently credentialed by CRCC were selected for the sample, and no further information was available related to how effective these practitioners were in relation to practice other than certification status. In addition, although the 39% response rate would be viewed as generally acceptable in relation to these types of survey research applications, a limitation is nevertheless noted. In addition, a Web-based platform was used in the survey process and 765 survey invitations were undeliverable due to bad e-mail addresses. A potential limitation is also recognized in relation to the content sampling of the knowledge items that were selected in revising the instrument employed in this study. To protect against this limitation, a multistage review process by several expert panels were employed in the study's design. Finally, another classic limitation imposed by the research methods employed in this study relates to the reliance on self-reporting in assessing the importance, frequency, and acquisition of various knowledge domains associated with effective practice.

Conclusions and Direct and Applied Applications

The primary purpose of this study was to conduct a study to empirically define and validate the major knowledge domains required for rehabilitation counseling practice across settings in today's rapidly changing practice environment. Key knowledge domains were identified and a group of randomly selected CRCs rated the knowledge domains in terms of importance, frequency, and knowledge acquisition. The results of this study have direct applications and applied utilization for several important areas related to rehabilitation counseling.

First, in relation to direct application, the findings and specific data from this study have been utilized by CRCC to set test specifications for future versions of the CRCE. The factors, domains, and subdomains identified provided a blueprint structure for future versions of the CRCE. This empirically derived organizational structure of content was also used to determine the conjunctive scoring guidelines for the exam that will begin to be offered through computer-based technology beginning in the fall of 2008. In addition to CRCC, the results of this study can be directly applied by CORE to facilitate and guide potential curriculum revisions or changes that may be

needed to reflect the current state of rehabilitation counseling practice in future versions of the standards.

In terms of applied utilization, the results of this study can be used by both preservice educators and in-service training staff to evaluate, update, and revise the curriculum and training provided. These findings are similar to the study completed by Leahy et al. (2003), and therefore significant changes to the curriculum and training may not be warranted. However, the findings should be used to determine the scope of training and the importance of critical domain areas that should be covered in both preservice and professional development training. The information related to the importance and frequency can be used as a guideline for the amount of training time and emphasis devoted to each domain and subdomain. Finally, the result of this study can also be utilized by rehabilitation professional organizations to update the rehabilitation counseling scope of practice. This will be particularly important as the issue of counselor licensure continues to be a critical issue for rehabilitation counselors at the national level. The results of this study clearly identify the importance of counseling in rehabilitation counseling practice as it relates to the personal and vocational development of an individual with a disability. In terms of future research, it will be imperative to examine how these knowledge areas are applied in practice and what specific approaches are evidence-based in relation to successful outcomes for persons with disabilities. Empirically defined competencies and expertise in working with individuals with disabilities is an important finding to convey to the public, consumers, legislators, policy makers, and other related service providers in terms of the scope of practice and individuals served by rehabilitation counselors.

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