Self-Reported Disability Competency in Naturopathic Medical Students

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Abstract:

Healthcare providers often feel unprepared to work with patients with disabilities. There have been no assessments or tools developed to evaluate whether naturopathic medical (ND) students also feel adequately prepared to work with patients with disabilities. We created a survey to assess student comfort levels, competency, and training needs. Surveys were completed by 218 ND students. Cronbach's alpha for all composite scores were >0.90, suggesting that the surveys have internal consistency. Student comfort working with patients with disabilities significantly increased by program year (p=0.02). Competency scores increased by program year, but this increase was not significant (p=0.17). Over 70% of students indicated that they would like more training on this topic. We were able to assess ND student self-reported comfort, competency, and desire for training with regard to treatment of patients with disabilities. Additional work should be performed to improve disability education for ND students.

A significant proportion of people with disabilities use complementary and alternative medicine (CAM).[1,2,3] Use is higher among most types of CAM categories, including alternative medical systems (e.g., naturopathy).[4] Currently, no studies have assessed how prepared CAM practitioners feel to work with people with disabilities.

People with disabilities face many healthcare barriers. Several barriers exist even within the patient-provider relationship because providers feel uncomfortable or unprepared to work with patients with disabilities.[5,6] These factors may contribute to negative attitudes towards patients with disabilities among healthcare providers, but including curriculum on disabilities early in conventional medical students' education can improve those attitudes and comfort levels.[7,8]

Development of an instrument to measure healthcare student competencies and comfort levels towards patients with disabilities is an important first step in determining educational priorities and in measuring the effectiveness of educational interventions. Of the existing instruments, few target healthcare students, and most only focus on attitudes or on one area of disability (i.e., physical disability, but not other disabilities).[9,10]

In this study we aimed to assess self-reported competencies and comfort of naturopathic medical students when working with patients with disabilities using a novel survey instrument.

Methods

Participants

Participants were recruited from the National University of Natural Medicine in Portland, Oregon. Students had to be currently enrolled in the naturopathic medicine doctorate (ND) program at the time of the survey. ND students attend a four-year to five-year graduate program that includes courses in basic sciences, pharmacology, nutrition, botanical medicine, and other natural therapies, including two years of direct patient care. Students participate in clinical rotations through different clinics, which include primary care clinics and low-income community based clinics. Students train to cover broad aspects of primary care, such as taking a patient history, performing physical exams, providing women's health services, and implementing treatment plans.

Students were emailed through the student listservs during the winter term. The email contained a brief invitation to participate in a 10-minute survey about disability and healthcare, as well as a link to the survey. Students were incentivized with an option to enter a draw for $50 gift cards. Weekly reminder emails were sent for three weeks. The survey was closed one week after the final reminder.

Data was collected anonymously. Study procedures were approved by the National University of Natural Medicine Institutional Review Board.

Survey Development

The survey was developed to include three subscales: comfort, competency, and desire for training. Fourteen individuals with backgrounds as NDs, MDs, CAM providers, allied healthcare providers, disability researchers, and disability advocates provided input for the content of the surveys based on their experiences. The surveys were written so that they may be applicable to other healthcare providers (e.g., MD, DO, NPs), although only ND students were included in this study.

The comfort scale addressed student's comfort working with patients with disabilities. While other surveys have been used to assess comfort, this survey was created to include more details about different disability types: (1) no disability, (2) physical disability, (3) sensory disability, and (4) intellectual and developmental disabilities (IDD); and four different aspects of the clinical encounter: (1) taking a medical history, (2) performing a physical exam, (3) performing a gynecological exam, and (4) delivering a treatment plan. Students responded for each statement on a 6-point Likert scale from "strongly disagree" to "strongly agree." For example, "For patients with physical disabilities, I feel comfortable performing a physical exam." Likert-scale responses were scored from 1-6 (strongly disagree=1). Each subscale had a possible total of 24. Total comfort for working with patients with disabilities added the three disability subscales for a possible score of 72.

The competency scale included nine competencies. Students used a 6-point Likert scale to rate each competency in response to the statement, "I have achieved this competency." The nine competencies were adapted from a combination of two sources: a comprehensive list of competencies for medical students determined by the American Academy of Developmental Medicine and Dentistry (AADMD) and those proposed by Kirchner and Curry in response to the Surgeon General's *Call to Action to Improve the Health and Wellness of Persons with Disabilities*.[11,12] The competencies were adapted for this study to simplify the competencies proposed by the AADMD, in order to make them tenable for a brief voluntary survey. The resulting survey still addresses two content areas from the AADMD that are not included among those proposed by Kirchner and Curry, but were deemed important in the current context. The final competencies we included were: (1) provide patient-centered care to address health concerns, preventative care, sexual and reproductive health, and health promotion for patients with disabilities; (2) understand disabilities in the context of human diversity, illness, the life span, and social constructs; (3) describe and assess different types of disabilities and their impact on health; this includes assessing common comorbidities, associated conditions, and healthcare disparities experienced by people with disabilities; (4) follow general principles and etiquette for interacting with persons with disabilities; (5) identify the roles involved in interdisciplinary care teams and the roles of the patient's support system; (6) identify resources for medical and lay persons on disability healthcare topics, including: medical recommendations, reimbursable series and supports, obtaining durable medical equipment, etc; (7) communicate effectively with patients, their family and support network, and other healthcare providers; and be able to use alternative communication methods when necessary; (8) understand the legal requirements of the Americans with Disabilities Act in healthcare; (9) assess patients for decision making capacity. Likert-scale responses were scored from 1-6 (strongly disagree=1). The highest possible score is 54, indicating more self-rated competency achievement.

The desire for training scale asked students to use a 6-point Likert scale to rate each of the same nine competencies in response to the statement, "I would like more training in this competency." Likert-scale responses were scored from 1-6 (strongly disagree=1). The highest possible score on the scale is 54, indicating desire for more training.

Other Variables

Participants were asked about previous disability experience. Participants were considered to have previous disability experience if they answered "yes" to one or more of the following questions: "Do you personally have a disability", "Are you close to someone with a disability, such as a family member or friend," "Have you ever had any previous work or volunteer experience with people with disabilities?"

Procedures

Study data was collected and managed using REDCap electronic data capture tools hosted at Oregon Health and Science University.[13,14] REDCap (Research Electronic Data Capture) is a secure, web-based software platform designed to support data capture for research studies.

Statistical Analysis

Internal validity was measured using Cronbach's alpha. Alpha scores over 0.70 were considered to indicate internal consistency. Linear correlations between scales were measured by Pearson correlations. A 3-way ANOVA was performed on each scale to determine mean differences and interactions between gender identity, program year, and previous disability experience. T-tests and independent and mixed ANOVAs were used to compare means across program years, gender identities, and questionnaire domains. Significance of all analyses was set at $p<.05$.

Results

Surveys were sent to 443 students; 218 completed the surveys for a response rate of 49.2 percent. Participant characteristics are described in Table 1. Seventy-four percent of survey respondents were female-identified, which reflects the gender identity enrollment ratio (74% female-identified, 24% male-identified, 2% other).

Survey Analysis

Cronbach's alphas were determined for all scales to determine internal consistency (Table 2). Correlations between the scales showed that the competency and comfort scales were significantly correlated ($r = 0.515$, $p<.01$) as well as the competency and desire for training scales ($r = -0.238$, $p<.01$).

Comfort Scale

Students in all program years were less comfortable working with patients with disabilities overall compared to patients without disabilities ($p<.001$ for comparisons in each year). Students were more comfortable working with patients with physical or sensory disabilities than those with intellectual and developmental disabilities (IDDs) (Table 3; $p<.001$ for all students; $p<.001$ for each individual year).

The average disability score significantly increased between years ($p<.001$ for linear trend in year). Comfort increased for all patient types between years (Table 3). Compared to year 1, year 4 students scored 6.2 points higher for patients without disabilities ($p<.001$), but only 3.9 points for the average disability ($p<.001$): 4 points for physical disabilities ($p<.001$), 4.5 points for sensory disabilities ($p<.001$), and 3.3 points for IDDs ($p=0.001$). Looking at year 1 and 4 when comparing the Physical, Sensory, and IDD domains, only the increases for Sensory and IDD disabilities were statistically significant ($p=.02$).

There were significant gender identity differences with regard to working with patients with disabilities, with male-identified students reporting a higher comfort ($p=.04$ by independent t-test). The 3-way ANOVA showed a significant interaction between gender identity and program year ($p=.002$). Further evaluation indicated that female-identified students had higher increases in their reported comfort level working with patients with disabilities relative to male students, who reported a higher initial comfort level which did not change markedly between years ($p=.002$ for year*gender identity interaction). For total comfort scores and average disability scores, the rate of increase per year in female-identified students is significantly higher ($b=2.07$; $p=.001$ and $b=2.60$; $p<.001$).

There were no significant differences on self-reported comfort in working with patients with and without disabilities between students with and without previous disability experience ($p=.09$).

Competency Scale

Average competency scores are listed in Table 4. There was a significant effect of year on total competency scores ($p<.001$ by one-way ANOVA), with a significantly positive trend towards greater scores in later years in the program ($b=2.81$; $p<.001$). Table 5 lists the percent of students reporting that they agreed or strongly agreed that they had achieved the listed competency. No competency in any year had more than 50% of students agree that they had achieved that competency.

There were significant differences in reported overall competency achievement based on prior disability experience ($p=.02$), where students with more disability experience had more self-reported competency. There were no significant differences in self-reported competency achievement based on gender identity ($p=.07$).

Desire for More Training Scale

Over 70% of all students in each year agreed or strongly agreed they would like more training in each competency. Total score for desire for more training was not affected by the student's year of study ($p=.13$), gender identity ($p=.10$), or previous disability experience ($p=.63$).

Discussion

To our knowledge, this is the first study to evaluate disability education for CAM healthcare students, specifically ND students. Overall, students were less comfortable working with patients with disabilities, especially patients with IDD. The difference between comfort level of working with patients with disabilities and without disabilities grew wider between each class year. This indicates that students gain more comfort working with patients as they move through the program, but there were smaller gains for patients with disabilities compared to patients without disabilities.

Achievements in disability related healthcare competencies were assessed. There were no significant differences based on program year of students self-reported competency; i.e., student self-reported competency did not improve significantly by the end of the program. While there were no objective measures of competency assessed in this study, it is still concerning that students themselves do not feel that they have attained competency in these areas. In this study, previous experience with disabilities was the strongest predictor of achieving higher competencies during training, suggesting that students mostly rely on their own life experiences with disabilities and may not be receiving significant instruction on disability topics to increase their disability competency. The majority of students would like increased training in working with patients with disabilities, which is consistent with similar research in other types of medical students.[15]

Gender Biases

Previous studies of medical student attitudes towards patients with disabilities show that male-identified medical students have more negative attitudes toward disability than female-identified students.[16] In this study, the only scale that was significantly influenced by gender identity was the comfort scale. Male-identified students reported higher comfort level than female-identified students. Moreover, comfort levels were similar across training years for male-identified students, whereas they increased with training for female-identified students. There are a couple possible reasons for this difference. As men may be more likely to report higher confidence, it is possible that self-reported comfort levels may have a ceiling

effect for male-identified students.[17,18] Female-identified students may more accurately report their lack of comfort, allowing us to see gains with increased experience. However, the gender identity difference seen in comfort level needs to be interpreted with caution given the small sample size of male-identified students. Each year in the program only had 9-14 male-identified students reporting.

Survey Assessment

We assessed the content and internal validity of this new survey. Fourteen medical professionals (MDs, NDs, PT, & OT), disability researchers, and disability advocates evaluated the survey for content. The three scales achieved high internal consistency, with Cronbach's alpha scores all being greater than 0.9. In addition, the comfort and competency scales showed increased scores with each year in the program, indicating sensitivity to increasing experience. The competency achievement scale and desire for more training scale were significantly inversely correlated. Because students gain more competencies during their program, it was expected that their desire for more training would decrease.

Limitations

There are several limitations to this study. All values are self-reported; we did not include any objective measures of competency. This is a survey study and is subject to many biases associated with surveys, such as recruitment bias. The survey invitation did mention disability and health care topics, so this may bias students that are interested in disabilities to take the survey. These students may be more likely to indicate frustrations about lack of disability education, but may also be more likely to feel adequately prepared to work with patients with disabilities. This was a cross-sectional study, so students were not followed prospectively to measure individual changes in comfort and competency ratings. This is also a single site study and may not be representative of other institutions. We used novel surveys in this study, which have not been fully validated, but we were able to show that they had high internal consistency.

Future Directions

Students were interested in more education on disabilities. There are several possible ways to improve disability education such as increasing the number of educational objectives throughout the program that address care for people with disabilities; including standardized patients who have disabilities; and include people with disabilities in the design of educational objectives.

Conclusion

We used three novel scales to assess ND students' comfort, competency, and training needs for working with patients with disabilities. ND students would like more training regarding patients with disabilities and further curriculum evaluation on this topic is warranted.

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TABLE 1: Participant characteristics (n=218)

Characteristics	n (%)
ND Program year	
1	45 (20.6)
2	48 (22.0)
3	47 (21.6)
4+	78 (35.8)
Gender	
Male	46 (21.1)
Female	162 (74.3)
Other	7 (3.2)
No answer	3 (1.4)
Previous degrees received	
DO	1
MD	3
MS	10
PhD	1
RN	1
Previous disability experience	
Personal disability	13 (6)
Family or friend with disability	92 (42.2)
Volunteer or work experience with disability	146 (67.3)
Have had clinic shifts with patients with disabilities	
Yes	72
No	108
Have not had any clinic shift yet	38

TABLE 2: Internal reliability for each scale and subscale

Scale	Cronbach's alpha
Comfort*	0.96
No disabilities	0.91
Physical disability	0.88
Sensory disability	0.91
Intellectual and Developmental disability	0.92
Competency	.93
Training	.95

* Total comfort is the summary score for physical disability, sensory disability and IDD – does not include patients without disabilities

TABLE 3: Average Comfort scores by program year and overall

Program Year	*No Disability*	*Disability* Average*	*Disability Subscales*		
			Physical	Sensory	IDD
1	14.8	13.1***	13.7	13.2#	12.2###,^^
2	16.9	14.8***	15.6	15.0#	13.8###,^^
3	19.2	16.2***	17.2	16.9	14.6###,^^^
4+	21.0	17.0***	17.7	17.7	15.5###,^^^
Overall	18.4	15.5***	16.3	16.0#	14.2###,^^^

*Average of the three disability subscales.
Significant differences from No Disability (* p<.05; ** p<.01; *** p<.001)
Significant differences from Physical (# p<.05; ## p<.01; ### p<.001)
Significant differences from Sensory (^ p<.05; ^ ^ p<.01; ^ ^ ^ p<.001)

TABLE 4: Average Competency Scores by Program Year

Program Year	*Average*	*SD*
1	23.6	9.0
2	26.2	9.7
3	28.1	9.2
4+	32.1	8.1

Scores increase with increasing years (b=2.81, p<.001)

TABLE 5: Percent of ND students self-reporting that they agree/strongly agree that they have met the following competencies

Competency	ND1 (%)	ND2 (%)	ND3 (%)	ND4+ (%)
1. Provide patient-centered care to address health concerns, preventative care, sexual and reproductive health, and health promotion for people with disabilities.	2.2	10.4	12.8	20.5
2. Understand disability in the context of human diversity, illness, the lifespan, and social constructs.	24.4	31.3	14.9	37.2
3. Describe and assess different types of disabilities and their impact on health. This includes assessing common comorbidities, associated conditions, and healthcare disparities experienced by people with disabilities.	11.1	4.2	8.5	23.1
4. Follow general principles and etiquette for interacting with people with disabilities.	35.6	29.8	21.3	50.0
5. Identify the roles involved in interdisciplinary care teams and the roles of the patient's support system.	13.3	20.8	17.0	24.4
6. Identify resources for medical and lay persons on disability healthcare topics, including: medial recommendations, reimbursable services and supports, obtaining durable medical equipment, etc.	2.2	2.1	6.4	10.3
7. Communicate effectively with patients, their family and support network, and other healthcare providers; and be able to use alternative communication methods when necessary.	17.8	12.5	17.0	28.2
8. Understand the legal requirements of the Americans with Disabilities Act in healthcare.	2.2	2.1	10.6	9.0
9. Assess patients for decision-making capacity.	4.4	6.3	10.6	12.8

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