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| **CRITICALLY APPRAISED TOPIC** |

**FOCUSED CLINICAL QUESTION**

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| In a first-year physical therapy student, is education regarding implicit bias towards individuals with disabilities effective in reducing implicit bias at graduation compared to a curriculum without education on implicit bias? |

**AUTHOR**

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| **Prepared by** | Jennell McIntosh | **Date** | 11/20/17 |
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**CLINICAL SCENARIO**

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| During my school physical therapy clinical affiliation, I was able to participate in a meeting for a young boy with severe developmental delays due to a seizure disorder. The meeting was scheduled for all of the educators and clinicians on his Individualized Education Program (IEP) team to discuss his progress before having the yearly IEP meeting with his parents. During the meeting, there were comments made by clinicians as well as educators including “he’s not going to improve so what is there to talk about” and “he gets it one day and the next he doesn’t” along with many others indicating a lack of empathy and some level of implicit bias towards this child because of his disability.  The lack of empathy and presence of negative attitudes towards individuals with disabilities has been reported by people with disabilities to be a major obstacle in receiving health care services.1,2 In the school setting, health care professionals and educators work collaboratively with students and their parents to form the IEP goals as well as provide the care needed to achieve these goals.3 This multidisciplinary approach to treatment that includes educators creates an opportunity for a well-equipped team to provide the best care for a child as well as a chance for health care professionals to make an impact on the attitudes that school officials and educators have towards people with disabilities.  The meeting made me wonder how people who were educated and licensed to serve a population that has disabilities could have these thoughts and feelings. A level of empathy and respect is necessary for all health professionals to provide the best unbiased care for the people that they serve. Negative attitudes and biases can become obstructions to successful health outcomes and rehabilitation.1 I believe there’s a possibility that health professional students, specifically physical therapy students, who are educated on implicit bias towards individuals with disabilities are less likely to carry bias into their practice after graduation. |

**SUMMARY OF SEARCH**

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| * There is very little research regarding the impact of implicit bias education on physical therapy students so I focused my search on the broader population of healthcare professional students. Broadening my search led me to 8 studies that satisfied my inclusion and exclusion criteria. Of these 8 studies, five had quasi-experimental designs and the remaining three were observational, cross-sectional designs. * Curricula that include a focus specifically on care and empathy as well as improving implicit attitudes towards individuals with disabilities can significantly improve the implicit attitudes of students in many health professions including physical therapy, nursing, medicine, and occupational therapy. * The success of curriculum components was increased when the programs lasted longer than just one short module and includes or is supplemented with a focus on the experiences of people with disabilities either in a class or clinical setting. |

**CLINICAL BOTTOM LINE**

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| There is limited evidence on health professional program curricula created to address and improve implicit bias towards individuals with disabilities but the present evidence shows that this curriculum can be effective in reducing students’ implicit biases. The available evidence shows greater benefit from curriculum with longer duration and inclusion of some aspect involving the personal experiences of individuals with disabilities. Faculty of physical therapy and other health professional programs can utilize this evidence to guide the formation of curricula but more research is needed to further assess the efficacy of strategies used in curricula to effectively decrease implicit biases in health professional students upon graduation. |

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| ***This critically appraised topic has been individually prepared as part of a course requirement and has been peer-reviewed by one other independent course instructor*** |

**SEARCH STRATEGY**

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| **Terms used to guide the search strategy** | | | |
| **P**atient/Client Group | **I**ntervention (or Assessment) | **C**omparison | **O**utcome(s) |
| Physical therapy students  Physiotherapy students  Health care students  Health professional students  Medical school students  Medical students | Education OR curriculum | *Not applicable* | Implicit bias  Implicit attitude  Stereotypes  ------------  Disability OR disabilities  People with disabilities  disabled |

**Final search strategy (history):**

1. “implicit bias” OR “implicit attitude” OR stereotype\*
2. disability OR disabilities OR “people with disabilities” OR disabled
3. Education OR curriculum
4. Physical therapy students [MeSH terms] OR “physiotherapy students”
5. “health care students” OR “health professional students”
6. “medical school students” OR “medical students”
7. #1 AND #2
8. **#1 AND #2 AND #3**
9. #1 AND #2 AND #3 AND #4
10. #1 AND #2 AND #3 AND #5
11. #1 AND #2 AND #3 AND #6

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| **Databases and Sites Searched** | **Number of results** | **Limits applied, revised number of results (if applicable)** |
| **PubMed- search line #8** | **164** | **I selected “Similar articles” to article #1 cited below and got me 217 that were generally more relevant to my PICO question.** |
| **PubMed- PT students** | **1** |  |
| **PubMed- health professional students** | **0** |  |
| **PubMed- medical school students** | **3** |  |
| **PsycInfo- search line #8** | **125** | **Academic Journals, published between 2003 and 2017 --- This decreased the number of results from 393 to 125.** |
| **PsycInfo- PT students** | **0** |  |
| **PsycInfo- health professional students** | **29** |  |
| **PsycInfo- medical school students** | **3** |  |
| **Web of Science- search line #8** | **21** |  |
| **Web of Science- PT students** | **0** |  |

## INCLUSION and EXCLUSION CRITERIA

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| **Inclusion Criteria** |
| Involves some form of comparison between two different time points in the curriculum of a Physical Therapy program or in other healthcare profession education programs  Focuses on implicit bias specifically towards individuals with disability |
| **Exclusion Criteria** |
| Not published in English  Focuses on explicit biases or attitudes  Focuses on implicit bias towards individuals based on characteristic other than disability such as race or weight  Abstracts |

**RESULTS OF SEARCH**

**Summary of articles retrieved that met inclusion and exclusion criteria**

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| **Author (Year)** | **Risk of bias (*Downs and Black* quality score)\*** | **Level of Evidence\*\*** | **Relevance** | **Study design** |
| **Vincent-Onabajo & Malgwi (2014)**4 | **19/27** | **3b;** downgraded from 2bbecause of low relevance due to no education on implicit bias described, just exposure to disabled people via clinical experiences | **Low** | Observational: descriptive, cross-sectional, prospective study |
| **Yorke, Ruediger, & Voltenburg (2017)**2 | **19/27** | **3b;** downgraded from 2b because low relevance due to no education on implicit bias described; just definition and discussion of disability throughout coursework | **Low** | Observational: descriptive, cross sectional, prospective study |
| **Miller (2013)**5 | **17/27** | **2b** | **Mod** | Quasi-experimental: single group pretest-posttest study |
| **Thompson, Emrich, & Moore (2003)**6 | **19/27** | **3b;** downgraded from 2b because of low relevance due to no education on implicit bias described as intervention; just “chronic illness course” | **Low** | Quasi-experimental: single group pretest-posttest study |
| **Stachura & Garven (2007)**7 | **16/27** | **3b;** downgraded from 2bbecause of low relevance due to no education on implicit bias described; simply a survey of OT and PT student attitudes | **Low** | Observational: cross-sectional survey- descriptive prospective study |
| **Lee, Paterson, & Chan (1994)**8 | **19/27** | **3b;** downgraded from 2b because of low relevance due to no education on implicit bias described; just “formal professional education” | **Low** | Quasi-experimental: causal-comparative study |
| **Morgan & Lo (2013)**1 | **20/27** | **2b** | **High** | Quasi-experimental: non-equivalent groups pretest-posttest control group design study |
| **Symons, Morley, McGuigan, & Akl (2014)**9 | **20/27** | **2b** | **Mod** | Quasi-experimental: non-equivalent groups pretest-posttest control group design study |

\*Indicate tool name and score

\*\*Use Portney & Watkins Table 16.1 (2009); if downgraded, indicate reason why

**BEST EVIDENCE**

The following 2 studies were identified as the ‘best’ evidence and selected for critical appraisal. Rationale for selecting these studies were:

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| * **Morgan PE, Lo K. Enhancing positive attitudes towards disability: evaluation of an integrated physiotherapy program. *Disability and Rehabilitation.* 2013;35(4):300-305. doi:10.3109/09638288.2012.691941.**   The Morgan and Lo study was the most relevant to my clinical question and is also very recent evidence. In assessing the risk of bias, it received one of the better scores and included a control group in it’s quasi-experimental design. In addition to it’s relevance and adequate design, it’s findings were statistically significant.   * **Symons AB, Morley CP, McGuigan D, Akl EA. A curriculum on care for people with disabilities: effects on medical student self-reported attitudes and comfort level. *Disability and Health Journal.* 2014;7(1):88-95. doi:10.1016/j.dhjo.2013.08.006.**   Although the Symons, Morley, McGuigan and Akl study focused on medical students and not physical therapy students, it was moderately relevant to my clinical question. The education regarding implicit bias and attitudes as well as comfort level towards individuals with disabilities was thoroughly described as the intervention in the study. The study also included a control group in it’s quasi-experimental design, received one of the better scores when assessing risk of bias, and included statistically significant findings. |

**SUMMARY OF BEST EVIDENCE**

**(1) Description and appraisal of *Enhancing positive attitudes towards disability: evaluation of an integrated physiotherapy program* by Morgan LE and Lo K, 2013**1

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| **Aim/Objective of the Study/Systematic Review:** |
| The purpose of this quasi-experimental study was to assess the impact of integrating elements to improve implicit bias into a 12-week neurological physical therapy interventions course on the implicit biases of students prior to any clinical experience. The study also aimed to determine the impact that clinical experience in addition to the integrated coursework has on implicit attitudes in students nearing the end of their physical therapy education. |
| **Study Design**  [e.g., systematic review, cohort, randomised controlled trial, qualitative study, grounded theory. Includes information about study characteristics such as blinding and allocation concealment. When were outcomes measured, if relevant]  Note: For systematic review, use headings ‘search strategy’, ‘selection criteria’, ‘methods’ etc. For qualitative studies, identify data collection/analyses methods. |
| * This study was a nonequivalent groups pretest-posttest control group study that utilized both quantitative and qualitative methods of outcome measurement. * **Data Collection:** The researchers used a self report questionnaire, the Discomfort subscale of the Interaction with Disabled Person’s Scale (IDP), and reflective essays as measurement of change in implicit biases or attitudes. Second year students who had no clinical experience were given the Discomfort subscale prior to beginning their 12-week integrated course and after completing the course. Each survey response was given a code to be sure that the pre- and post-course surveys for each student were paired correctly. These second year students also wrote reflective essays at the end of the coursework that underwent “de-identification” by a third party administrative assistant.1(302) Fourth year students anonymously completed the Discomfort subscale right before graduation and they also had the 12-week curriculum integrated course during their second year of the program. * **Data Analysis:** The mean and standard deviation of individual responses on each question of the Discomfort subscale as well as the subscale in it’s entirety were reported for each of the three groups: second year pre-course, second year post-course, and fourth year before graduation. The difference between second year pre- and post-course scores on the Discomfort subscale were reported using a paired t-test. The difference between second year pre-course scores and fourth year scores as well as the difference between second year post-course scores and fourth year scores was reported using the Mann-Whitney U test. The researchers decided not to accept results with more than a 5% probability that they were due to chance, p < 0.05. |
| **Setting**  [e.g., locations such as hospital, community; rural; metropolitan; country] |
| The study took place at Monash University in Frankston, Australia. |
| **Participants**  [N, diagnosis, eligibility criteria, how recruited, type of sample (e.g., purposive, random), key demographics such as mean age, gender, duration of illness/disease, and if groups in an RCT were comparable at baseline on key demographic variables; number of dropouts if relevant, number available for follow-up]  Note: This is not a list of the inclusion and exclusion criteria. This is a description of the actual sample that participated in the study. You can find this descriptive information in the text and tables in the article. |
| The study had a total of 92 total participants with 47 being second year students and 45 fourth year students. The group of second year students represented 70% of the university’s second year class and the group of fourth year students were 75% of the fourth year class. Both the second year student group and the fourth year student group were two-thirds female which the researchers reported was representative of the full class gender make-up. The groups were made up of the students in each class who consented to participate in the study. At the time of data collection, the fourth year student participants all had at least 37 weeks of clinical experience. A purposive sampling technique was used to select participants. |
| **Intervention Investigated**  [Provide details of methods, who provided treatment, when and where, how many hours of treatment provided] |
| *Control* |
| This study design was quasi-experimental and both the second year students and fourth year students received the 12-week integrated neurological interventions course. The difference between the two groups was that the fourth year students had at least 37 weeks of clinical experience while the second year students had none. The 37 weeks of clinical experience that the fourth year student group had all included 9 weeks in a neurological practice and 2 weeks in a pediatric practice. This course and clinical experience are representative of Monash University’s entire physical therapy program. The fourth year students did not have to write a reflective essay after completing the 12-week integrated neurological interventions course and they did not take the Discomfort subscale of the IDP prior to the course; their participation was included to assess the efficacy of entire physical therapy program in improving implicit biases as well as to assess the effect of clinical experience on implicit biases. |
| *Experimental* |
| The 12-week integrated neurological interventions course consisted of four different components:1(301)   * Theoretical content: neurological structure and pathology of many neurological disorders, framework of “client centered practice”, and empathy * Case-based learning: focused on sociological and psychological aspects of treatment of neurological disorders with framework from the ICF model and “social model of health”, used some videos to present cases * Practical skills: case simulations of patients with difficulty communicating due to neurological disorders; took place in an interdisciplinary setting * Master class: guest speaker with a neurological disorder spoke from personal experience about interactions and relationships with clinicians, videos made by clinicians to show treatment of pediatric patients with neurological disorders   The reflective essays were written by the second year students after the master class component of the course at the very end of the semester. In writing these essays, the students were asked to evaluate their attitudes towards individuals with neurological disorders and their analysis was guided by use of Gibbs’ reflective cycle. Gibbs’ reflective cycle has been used to facilitate patient-centered care in may health care professions including midwifery, physical therapy, and nursing.10 The stages of Gibbs’ reflective cycle include: description, feelings, evaluation, analysis, conclusion, and action plan.10 |
| **Outcome Measures**  [Give details of each measure, maximum possible score and range for each measure, administered by whom, where] |
| * **Discomfort subscale of the Interaction with Disabled Person’s Scale (IDP):** 5 statement self-report questionnaire that uses the 6 point Likert scale to assess agreeance with each question. The value 1 indicates strong disagreement and the value 6 indicates strong agreement. The maximum score is 25 points and a higher score indicates more discomfort in interacting with individuals with disabilities. The subscale was completed at the start of the semester for second year students, after the 12-week course for second year students, and right before graduation in the fourth year students. The five statements on the subscale are: * 1. I feel unsure because I do not know how to behave. * 2. I feel uncomfortable and find it hard to relax. * 3. I cannot help staring at them. * 4. I tend to make contacts only brief and finish them as quickly as possible. * 5. I am afraid to look at the person straight in the face. 1(302) * **Reflective essays:** Each essay was read initially to draw out common themes among them all and four themes were noticed. The two researchers then read the essays again and coded them based on the presence of the four themes. All differences between the two researchers individual coding were discussed and a final analysis was completed for each essay. |
| **Main Findings**  [Provide summary of mean scores/mean differences/treatment effect, 95% confidence intervals and p-values etc., where provided; you may calculate your own values if necessary/applicable. Use a table to summarize results if possible.] |
| * The mean of the Discomfort subscale of the IDP for second year students prior to the integrated course was 13.1 out of 25 points with a standard deviation of 3.93 points. After the 12-week integrated course, second year student scores had a mean of 11.7 out of 25 points with a standard deviation of 3.81 points. * The mean of the IDP scores for the fourth year students right before graduation was 11.0 out of 25 points with a standard deviation of 4.12 points. * With the paired t-test, the difference between the second year students pre- and post-course was found to be statistically significant with a p-value of 0.0016. * With the Mann-Whitney U Test, the difference between the pre-course second year student scores and the graduation fourth year student scores was found to be statistically significant with a p-value of 0.040. * With the Mann-Whitney U Test, the difference between the post-course second year student scores and the graduation fourth year student score was found to not be statistically significant with a p-value of 0.703. * In analyzing the reflective essays, researchers found these four themes: confrontation by disability, realization of inaccurate perceptions of disability, development of insight and awareness, and developing recognition of need for client centered care.1(303) * Only p-values were reported in the assessment of statistical significance so I calculated the absolute effect sizes and their respective confidence intervals with help from an online calculator created by the Centre for Evaluation & Monitoring.12 * The absolute effect size of the second year students pre- and post-course scores is 1.4 points (95% CI -0.19 to 2.99 points). * The absolute effect size of the second years’ pre-course scores and the fourth years’ scores right before graduation is 2.1 points (95% CI 0.43 to 3.77 points). * The absolute effect size of the second years’ post-course scores and the fourth years’ scores right before graduation is 0.7 points (95% CI -0.94 to 2.34 points). |
| **Original Authors’ Conclusions**  [Paraphrase as required. If providing a direct quote, add page number] |
| The authors concluded that a semester-long integrated curriculum can improve student’s attitudes about and discomfort levels in interactions with neurologically disabled individuals. They also concluded that this improvement can help students be better equipped to enter into clinical experiences with populations who have neurological disabilities. |
| **Critical Appraisal** |
| **Validity**  [Summarize the internal and external validity of the study. Highlight key strengths and weaknesses. Comment on the overall evidence quality provided by this study.] |
| * Downs and Black checklist score: 20/27 with no points awarded for the following checklist items:  |  | | --- | | 5. Are the distributions of principal confounders in each group of subjects to be compared clearly described? | | 8. Have all important adverse events that may be a consequence of the intervention been reported? | | 14. Was an attempt made to blind study subjects to the intervention they have received? | | 23. Were study subjects randomized to intervention groups? | | 24. Was the randomized intervention assignment concealed from both patients and health care staff until recruitment was complete and irrevocable? | | 25. Was there adequate adjustment for confounding in the analyses from which the main findings were drawn? | | 27. Was a power analysis reported? |  * The participants were a sample of convenience and the study was a cohort design so randomization wasn’t appropriate. That being said, the researchers still ensured that survey responses and reflective essays remained anonymous to those collecting and analyzing the data. * The number of total participants was small but the authors noted that the qualitative data added value to their quantitative data.1(304) * The statistically significant change seen in second year students after completing the integrated course could’ve been due to the students maturing with time and not the coursework.1(304) * It is also possible that the students’ responses were influenced by the desire to please their professors and to receive a good grade in the course. * The Discomfort subscale of the Interaction with Disabled Persons’ Scale was an adequate measure to assess change in the attitudes of the students. The subscale is responsive to change and has great internal consistency.11 Additionally, the brevity of the subscale makes students more likely to be compliant in responding.1(302) * The external validity of the study is limited because it’s impossible to determine if the entire course was successful in changing the students’ attitudes or if just one or a few components of the course caused the change.1(304) * The external validity is also limited by the fact that the authors didn’t present specific demographic information such as age, ethnicity, or previous personal experience with disability for the participants. This information could’ve affected scores and may not have been equivalent in the second year student group and the fourth year student group. * The mean scores for each questionnaire item as well as the mean total score for second years pre-intervention, second years post-intervention, and fourth years right before graduation were presented as well as an analysis of the qualitative narratives written by the second years. The completeness of the quantitative data presented alongside the qualitative data added richness to the results and overall quality of the evidence. |
| **Interpretation of Results**  [This is YOUR interpretation of the results taking into consideration the strengths and limitations as you discussed above. Please comment on clinical significance of effect size / study findings. Describe in your own words what the results mean.] |
| I wasn’t able to find the MCID or MDC for the Discomfort subscale of the IDP to compare to absolute effect sizes so I focused on the confidence intervals of the absolute effect sizes to assess the clinical significance of the results.  The results show that the 12-week integrated neurological interventions course reached statistical significance indicating that the course was effective in improving the attitudes and discomfort levels of the second year physical therapy students who have no clinical experience. The absolute effect size of this within group difference is 1.4 points (95% CI -0.19 to 2.99 points) and the inclusion of the value 0 in the confidence interval leads me to believe that this difference isn’t clinically significant. The CI of the absolute effect size shows that I can be 95% sure that if the average difference between the second years pre- and post-intervention survey scores isn’t 1.4 points, then it’s between -0.19 points and 2.99 points. This leaves open the possibility that there is indeed no difference between the average scores before the curriculum and after the curriculum. This could be due to the small sample size utilized in this study.  The results show that the difference between the Discomfort IDP subscale scores of the second years before the start of the course and the scores of the fourth year students right before graduation was statistically significant indicating that fourth year students have less negative attitudes towards disabled individuals than second year students before taking the course. The absolute effect size of this between group difference is 2.1 points (95% CI 0.43 to 3.77 points). The CI doesn’t include the value 0 leading me to believe that the difference is also clinically significant. I can be 95% sure that if the average difference between the second years pre-curriculum and fourth years right before graduation isn’t 2.1 points then the average difference is between 0.43 points and 3.77 points.  Lastly, the results show that the difference between the Discomfort IDP subscale scores of the second years at the end of the course and the scores of the fourth year students right before graduation did not reach statistical significance indicating no difference in the attitudes and discomfort level of second year students who’ve taken the integrated course and the fourth year students right before graduation. The absolute effect size of this between group difference is 0.7 points (95% CI -0.94 to 2.34 points). The CI of the absolute effect size does include zero leading me to believe that the difference isn’t clinically significant either. I can be 95% sure that if the average difference between the second years post-curriculum and the fourth years right before graduation isn’t 0.7 points then it’s between -0.94 points and 2.34 points. This means that it is possible that there is no difference between the two groups average questionnaire scores. The lack of clinical significance here could be due to the possibility that the fourth year students and second year students were not statistically similar at baseline. The authors didn’t have baseline IDP Discomfort subscale scores for the fourth year students. |
| **Applicability of Study Results**  [Describe the relevance and applicability of the study to your clinical question and scenario. Consider the practicality and feasibility of the intervention in your discussion of the evidence applicability.] |
| This study is very relevant and applicable to my clinical scenario because it focuses on the impact that a course with educational components on implicit attitudes has on physical therapy students before and after the curriculum as well as immediately prior to graduation. The elements of the course are similar to experiences that I’ve had in my Doctor of Physical Therapy program coursework. With that being said, the authors note that it is difficult to determine if the entire course or just components of the course were the reason for the improvement. Every physical therapy program may not have the means to provide an identical 12-week integrated course. I think that physical therapy educators can use this study to guide their curricula formation but determining what components of the program were the cause of the improvement warrants further investigation. |

**(2) Description and appraisal of *A curriculum on care for people with disabilities: effects on medical student self-reported attitudes and comfort level* by Symons AB, Morley CP, McGuigan D, and Akl EA, 2014**

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| **Aim/Objective of the Study/Systematic Review:** |
| The purpose of this study was to assess the impact that a longitudinal, three year long curriculum on individuals with disabilities can have on American medical students’ comfort levels with and attitudes towards disabled individuals. The study also aimed to determine if individual factors have any influence on the attitudes that students have about individuals with disabilities and their comfort level when interacting with individuals with disabilities. |
| **Study Design**  [e.g., systematic review, cohort, randomised controlled trial, qualitative study, grounded theory. Includes information about study characteristics such as blinding and allocation concealment. When were outcomes measured, if relevant]  Note: For systematic review, use headings ‘search strategy’, ‘selection criteria’, ‘methods’ etc. For qualitative studies, identify data collection/analyses methods. |
| This study was a nonequivalent groups pretest-postest control group design with assessment before and after the intervention of interest, the disabilities curriculum.  **Data Collection:** The researchers created their own self-report questionnaire with 30 questions and a Likert-scale format. Medical students at one university completed the questionnaire in their first year before starting the disabilities curriculum and again at the end of their third year after they’d been through the main components of the curriculum. The control group of medical students who did not receive the disabilities curriculum were at an entirely different university medical school and they also completed the questionnaire during their first year and again during their third year. The questionnaires were completed anonymously and the pre and post curriculum questionnaire responses for each individual respondent were not linked.  **Data Analysis:** The questionnaire results from the first year completion were compared based on baseline results and demographic characteristics. The differences between the third year completion of the survey were compared using a one-way analysis of variance (ANOVA)and X2 with the true significance probability value being set at 0.05 or lower. The researchers utilized a p value between 0.10 and 0.05 to suggest “marginal significance.”9(90) In analyzing the third year survey completion, the 18 questionnaire items that focused on attitude and opinion were fashioned into composite variables by using principal components analysis. These composite variables were then assessed in relation to presence of the curriculum, age, gender, and responses to the scenarios included in the survey via the use of an ordinary least squares regression technique. |
| **Setting**  [e.g., locations such as hospital, community; rural; metropolitan; country] |
| The disabilities curriculum took place in the medical school at the State University of New York at Buffalo, NY and the control group attended the medical school at the State University of New York at Syracuse, NY. |
| **Participants**  [N, diagnosis, eligibility criteria, how recruited, type of sample (e.g., purposive, random), key demographics such as mean age, gender, duration of illness/disease, and if groups in an RCT were comparable at baseline on key demographic variables; number of dropouts if relevant, number available for follow-up]  Note: This is not a list of the inclusion and exclusion criteria. This is a description of the actual sample that participated in the study. You can find this descriptive information in the text and tables in the article. |
| The study included a total of 244 medical students with 128 of them receiving the disabilities curriculum. The average age of the intervention group was 23.77 years old and the average age of the control group was 24.01 years old. A purposive sampling technique was used and the two medical universities are in the same region of the United States and “comparable”.9(89) In the intervention group, 58 students were male and 70 were female. In the control group 57 students were male and 59 were female. The first year survey results in the intervention and control groups were “statistically similar” on the majority of the survey items.9(90) |
| **Intervention Investigated**  [Provide details of methods, who provided treatment, when and where, how many hours of treatment provided] |
| *Control* |
| The control group included medical students from the State University of New York at Syracuse, NY. These students didn’t have any specific disabilities curriculum. They completed the survey anonymously at the start of their first year and then again at the end of their third year in medical school. |
| *Experimental* |
| The experimental group included medical students from the State University of New York at Buffalo, NY. These students anonymously completed the survey at the start of their first year. They then began a disabilities curriculum that continued throughout their four years of medical school and was integrated into their other coursework and clinical experiences. During their first year, they attended a lecture given by a community organization that focused on working with people with disabilities. This lecture was followed by small group discussions about health care access with individuals who are disabled and the main focus of the smaller discussions is the positive and negative health care experiences of the disabled individuals.9,13 During their second year, the students attend a lecture on strategies to use during clinical experiences with people who are disabled and they have the opportunity to practice the skills they learn on disabled individuals acting as their patient in a “structured” environment.9,13 During their third year, the students participate in a clinical rotation in which a seminar and structured clinical experience about treating patients with disabilities are incorporated. The seminar is focused on the “socioeconomic and legal context” of treating patients with disabilities and clinical experience takes place in a clinic that specializes care and services specifically to people with disabilities.9,13 The post-curriculum survey is completed at the end of the third year but fourth year students have the option to take an elective on caring for patients with disabilities.9,13 |
| **Outcome Measures**  [Give details of each measure, maximum possible score and range for each measure, administered by whom, where] |
| The researcher created their own survey to assess the changes in attitude and comfort level toward people with disabilities. They stated that in creating this instrument they validated it prior to using and formed it with their review of other already existing measures in mind as well as input from healthcare “professionals who work with people with disabilities, medical educators, patients, and families”.9(89) The measure is made up of 30 questions with a 4 point Likert scale used on 26 of the questions.9,14 The measure include 2 questions on demographic characteristics, 2 questions on previous experience with people who have disabilities, 18 opinion questions about people with disabilities, and 4 questions for each of two clinical scenarios.13 A lower score indicates increased discomfort in interacting with people with disabilities and a more negative attitude towards them in all put 6 items on the measure and those are scored in the reverse.14 The demographic and previous experience questions are not scored.14 The minimum score is 26 and the maximum score is 104. The survey was “anonymously administered” to both the control and experimental groups at each time point.9(90) |
| **Main Findings**  [Provide summary of mean scores/mean differences/treatment effect, 95% confidence intervals and p-values etc., where provided; you may calculate your own values if necessary/applicable. Use a table to summarize results if possible.] |
| The authors only reported the p-values and means for items of the survey that had marginally or truly significant differences between the intervention and the control group. The authors used a p value </= 0.10 to indicate marginal significance and a p value </= 0.05 to indicate true significance.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Survey Item 13(91) | Mean Intervention | Mean control | X2 p value | ANOVA p value | | 1. “I am comfortable being around a person who has an intellectual disability (i.e. mental retardation, autism).” | 3.29 points | 3.1 points | 0.033 | 0.058 | | 2. “People with disabilities are as happy as people without disabilities.” | 3.1 points | 2.93 points | 0.115 | 0.065 | | 3. “I am more comfortable around people with intellectual disabilities when they have someone who is not disabled to help them.” | 3.28 points | 3.22 points | 0.071 | 0.008 | | 4. “I would be comfortable interacting with a person with intellectual disability who was in the community on his or her own (i.e. without staff members or caretakers).” | 3.33 points | 3.19 points | 0.083 | 0.143 | | 5.“If I were visited by a person who is blind, I would be comfortable helping him or her navigate the environment.” | 2.45 points | 2.35 points | 0.076 | 0.513 | | 6. “I would be comfortable living in a neighborhood where there is a group home for people with various developmental disabilities (e.g. Down syndrome, cerebral palsy, mental retardation, etc.).” | 3.09 points | 3.06 points | 0.219 | 0.072 | | 7. “Most people with disabilities feel sorry for themselves.” | 1.98 points | 1.91 points | 0.034 | 0.524 | | 8. “Most people with disabilities resent people without disabilities.” | 1.99 points | 1.75 points | 0.037 | 0.029 | | 9. “Most people with disabilities expect special treatment.” | 2.19 points | 1.84 points | 0.016 | 0.001 |   \*I’ve numbered the above survey items to increase the ease of presenting my own calculations of absolute effect size. The numbers are not indicative of the order of presentation on the survey. No standard deviations were provided so I wasn’t able to calculate the 95% confidence intervals of the absolute effect sizes.   |  |  | | --- | --- | | Survey item number | Absolute effect size | | 1 | 0.19 points | | 2 | 0.17 points | | 3 | 0.06 points | | 4 | 0.14 points | | 5 | 0.10 points | | 6 | 0.03 points | | 7 | 0.07 points | | 8 | 0.24 points | | 9 | 0.35 points |   The principal component analysis lead to the identification of five factors for each survey response to be categorized into: 9(92)   * Comfortable with interaction (21.922% variance explained) * Uneasy with interaction; acknowledge negative feelings (13.479% variance explained) * Comfortable with interaction/integration in general community (9.933% variance explained) * Conditional comfort (8.395% variance explained) * Positive impression of self-concepts of people with disabilities (8.275% variance explained)   The results of the Stepwise Ordinary Least Squares regression analysis highlighted two significant models:9(92)   * Male students more frequently agreed with negative statements. (beta: 0.628, p:0.005) * Male students who had clinical encounters with individuals with disabilities more frequently agreed with negative statements. (beta: 0.198, p: 0.049)   After the authors noticed that male students responded to negative statements differently, they decided to analyze the pre- and post- scores on the top three survey items categorized in the factor “Uneasy with interaction; acknowledge negative feelings.”13(91)   |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Survey items |  | Pre-test | | | | Post-test | | | | | Control (n- %) | | Case | | Control | | Case | | | Female | Male | Female | Male | Female | Male | Female | Male | | “Most people with disabilities expect special treatment.” | Strongly Disagree | 13-22.4% | 3  5.3% | 13  18.8% | 6  10.3% | 10- 28.6% | 7- 21.2% | 9- 21.4% | 3- 6.8% | | Disagree | 40-69% | 48-84.2% | 49- 71% | 33- 56.9% | 22- 62.9% | 23- 69.7% | 27- 64.3% | 25- 56.8% | | Agree | 5-8.6% | 6-10.5% | 7- 10.1% | 17-29.3% | 3- 8.6% | 3- 9.1% | 5- 11.9% | 11- 25% | | Strongly Agree | 0- 0% | 0-0% | 0- 0% | 0-0% | 0- 0% | 0-0% | 1- 2.4% | 5- 11.4% | | “Most people with disabilities resent people without disabilities.” | Strongly Disagree | 13- 22% | 16-28.1% | 15- 21.4% | 10- 17.5% | 10- 28.6% | 8- 24.2% | 11- 25.6% | 9- 20.5% | | Disagree | 43- 72.9% | 33- 57.9% | 50- 71.4% | 45- 78.9% | 24- 68.6% | 25- 75.8% | 26- 60.5% | 28- 63.6% | | Agree | 3- 5.1% | 7- 12.3% | 4- 5.7% | 1- 1.8% | 1- 2.9% | 0-0% | 3- 7% | 3- 6.8% | | Strongly Agree | 0-0% | 1- 1.8% | 1- 1.4% | 0- 0% | 0-0% | 0-0% | 3- 7% | 4- 9.1% | | “Most people with disabilities feel sorry for themselves.” | Strongly Disagree | 15- 25.4% | 8- 14% | 18- 25.7% | 9- 15.5% | 6- 17.1% | 3- 9.1% | 13- 30.2% | 7- 15.9% | | Disagree | 40- 67.8% | 42- 73.7% | 48- 68.6% | 41- 70.7% | 29- 82.9% | 27- 81.8% | 29- 67.4% | 29- 65.9% | | Agree | 3- 5.1% | 7- 12.3% | 4- 5.7% | 8- 13.8% | 0- 0% | 3- 9.1% | 0-0% | 3- 6.8% | | Strongly Agree | 1- 1.7% | 0- 0% | 0-0% | 0-0% | 0- 0% | 0-0% | 1- 2.3% | 5- 11.4% | |
| **Original Authors’ Conclusions**  [Paraphrase as required. If providing a direct quote, add page number] |
| Providing medical students with a curriculum focused on “caring for people with disabilities” improved many factors associated with attitudes and comfort towards disabled individuals that were measured by the survey the author’s created.9(93) Negative responses and reactions seem to differ based on gender with male medical students having more negative responses than females in the intervention group. |
| **Critical Appraisal** |
| **Validity**  [Summarize the internal and external validity of the study. Highlight key strengths and weaknesses. Comment on the overall evidence quality provided by this study.] |
| * Downs and Black checklist score: 20/27 with no points awarded for the following checklist items:  |  | | --- | | 5. Are the distributions of principal confounders in each group of subjects to be compared clearly described? | | 8. Have all important adverse events that may be a consequence of the intervention been reported? | | 14. Was an attempt made to blind study subjects to the intervention they have received? | | 23. Were study subjects randomized to intervention groups? | | 24. Was the randomized intervention assignment concealed from both patients and health care staff until recruitment was complete and irrevocable? | | 25. Was there adequate adjustment for confounding in the analyses from which the main findings were drawn? | | 27. Was a power analysis reported? |  * The participants were a convenience sampling from two universities where the researchers were employed. The study was a nonequivalent groups pretest-posttest control group design with no randomization. The surveys remained anonymous in both the intervention and the control group. * The internal validity of the study is improved by the fact that the control and intervention groups were “statistically similar at baseline” on most survey questions and were also demographically similar. There were no dropouts over the three year course of the intervention and the survey that they used to measure comfort levels with and attitudes towards individuals towards disabled individuals was validated.9 * The demographics reported by participants included age and gender and the survey also asked about previous clinical and personal experience with individuals with disabilities.9 * One weakness is that the pre- and post- survey responses were not linked so there’s no way to measure individual improvement in comfort and attitudes towards individuals who are disabled.9(94) * Students could have improved due to maturation over time and not the curriculum and they’re responses could’ve been influenced by their desire to please their professors who were on the research team. * In the researchers’ presentation of the survey response evidence, they specified a p-value of </= 0.10 as marginally significant and only presented the evidence on the survey questions that met at least marginal significance. The evidence quality is diminished by their choice to present these survey questions under the categories of “significant positive items, favoring intervention”, “nearly significant positive items, favoring intervention”, and “significant negative items reinforced in intervention” and including p-values of more than 0.05 under the categories claiming true significance.9(91) |
| **Interpretation of Results**  [This is YOUR interpretation of the results taking into consideration the strengths and limitations as you discussed above. Please comment on clinical significance of effect size / study findings. Describe in your own words what the results mean.] |
| The presentation of the results regarding the survey items shows that 6 out of the 30 items assessed on the survey that the researchers created showed at least marginal significantly more positive scores in the intervention group. Out of these 6, only 2 survey responses showed differences that were truly a significant improvement in the intervention group. Additionally, 3 out of the 30 survey items showed true significant differences that indicated more negative attitudes towards people with disabilities in the intervention group. One major weakness of the study was that the pre- and post- survey responses weren’t linked and this weakness along with the authors’ decision to focus on individual survey items rather than total survey scores make it very difficult to conclude clinical significance of the study results. The authors created the survey for the purpose of this study so I wasn’t able to find any data on the MCID or MDC of the measure. The absolute effect sizes on each of the reported survey item differences were very small and none of them reached a full point so despite their concluded statistical significance, I don’t believe that the results were clinically significant. With that being said, there is value in studying the use of such a long term curriculum focused on increasing comfort level with and attitudes towards individuals with disabilities. The authors found a gendered difference in survey responses with male medical students agreeing more often with negative statements than female medical students. This difference was truly statistically significant and the author’s post-hoc analysis of the negative survey items added richness to their conclusion of this gendered difference leading me to agree that this finding is clinically significant as well. |
| **Applicability of Study Results**  [Describe the relevance and applicability of the study to your clinical question and scenario. Consider the practicality and feasibility of the intervention in your discussion of the evidence applicability.] |
| This study focuses on the effects that a long term curriculum focused on working with disabled individuals has on medical students. My clinical question focuses specifically on physical therapy students but this study’s intervention can feasibly be adapted to a physical therapy curriculum. Doctor of Physical Therapy programs in the United States are only three years long while medical school is at least four years long but the intervention became optional for the medical students in their fourth year so this doesn’t take away from the interventions applicability. The results of the study weren’t very strong statistically and it’s not clear if the entire intervention or just components of the curriculum were responsible for the statistically significant improvements seen in the intervention group. Physical therapy educators can use this intervention curriculum to guide them but should do so with caution and not without the further investigation of which components of the curriculum were the reason for improvement in comfort level and attitudes towards disabled individuals. |

**SYNTHESIS AND CLINICAL IMPLICATIONS**

[Synthesize the results, quality/validity, and applicability of the two studies reviewed for the CAT. Future implications for research should be addressed briefly. Limit: 1 page.]

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| The evidence appraised was not strong enough statistically to support the use of integrated curricula in healthcare professional education that focus on caring for individuals with disabilities in improving comfort levels with and attitudes towards these same individuals. In the quasi-experimental pretest-posttest study by Morgan and Lo, the results only showed statistically and clinically significant differences between the second year physical therapy students pre-curriculum and the fourth year physical therapy students right before graduation.1 The fourth year physical therapy students in this study also experienced the 12-week curriculum but they weren’t given the survey before the curriculum to assess their baseline attitudes and comfort level so it’s not possible to differentiate if their improved comfort with and attitudes towards disabled individuals is a product of the curriculum alone or if it’s a product of their maturation over time and clinical experience. The sample size in the Morgan and Lo study was also small and this could’ve affected the quality of the evidence in their assessment of the second year students pre- and post- curriculum. The addition of the qualitative analysis of narratives written by the second year students in the Morgan and Lo study highlight that despite the lack of statistical or clinical significance, the 12-week curriculum did cause the second year students to begin to confront their attitudes and recognize the importance of improving them to provide the best care to individuals with disabilities.  In the nonequivalent groups pretest-posttest control group study by Symons et al, the results of their 30 item survey only showed statistically significant differences between the intervention and control group on five items. Three of these items indicated more negative attitudes towards individuals with disabilities in the intervention group than the control group while two items showed more positive attitudes in the intervention group.9 The authors also noticed that male medical students tended to answer in the affirmative to more negative statements on the survey than female medical students.9 The absolute effect sizes for every survey item difference reported were very small and the pre- and post-three year curriculum surveys were not linked so there was no way to assess individual changes in comfort and attitudes towards disabled individuals making.9 The data collection and analysis weaknesses of this study limited it’s ability to prove the clinical significance of the extensive curriculum created as the study’s intervention. There is some value to the development of a curriculum that spans three years though and their finding of gendered differences was statistically and clinically significant.  The curricula developed by Morgan and Lo and Symons et al in these two studies provide preliminary evidence that there can be some benefit to educating health care professional students on implicit bias towards individuals with disabilities. These studies also highlight the need for more research. Both interventions were fairly extensive and the effectiveness of the entire curriculum was assessed but not that of individual components of the curriculum. Many physical therapy education programs may not have the resources to replicate the entire curriculum in either of these studies so further research into what components of curricula on implicit attitudes towards disabled individuals are the most successful is necessary. It’s also important to note that the outcome measures used in these studies are all self-report measures of comfort with and attitudes towards disabled individuals which involves some room for error in the educational setting where students often want to please their teachers and may not be completely honest in their responses. Further research into measures of implicit attitudes that are based off of action in the presence of individuals with disabilities in a clinical environment could benefit the knowledge available about the benefit of curricula that address implicit attitudes. The gendered difference found in Symons et al’s study also warrants further evidence into how to best create curricula that improve the implicit attitudes towards individuals with disabilities in both men and women equally. |

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