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Persons with Disabilities (PWD) as patient educators: Effects on medical student attitudes

Vivien Lee[1], Jeffrey Jiang[1], Anna Szücs[1], V Vien Lee[1], Low Si Hui[2], Faith Teo[1], Jose M Valderas[1] & Victor Loh[1]

[1]Division of Family Medicine, Yong Loo Lin School of Medicine, National University of Singapore, Singapore; [2]National University Polyclinics, Singapore

Abstract

Introduction: Globally, persons with disabilities (PWD) face structural and social barriers to inclusive healthcare. Medical schools, as crucibles of medical professional identity formation, have the responsibility to foster person-centredness toward all patients, including PWD, among her graduates. We co-designed with PWD a "Communications with Persons with Disabilities" workshop and evaluated its impact.

Methods: The workshop enlisted PWD as patient educators, occurred within the third-year undergraduate Family Medicine posting, and was designed to positively impact communications skills and attitudes toward PWD. Students (n=135) were surveyed pre- and post- workshop following a mixed-methods approach (demographic data, *Attitude Towards Disabled Persons* (ATDP)-O scale, feedback questions, and post-workshop free reflections). Descriptive analysis was used for demographic and feedback questions, and thematic analysis for reflections. Paired t-test was used to evaluate change in ATDP-O scores.

Results: There were 69 survey respondents (51.11%). Most students agreed that communications training with PWD could be strengthened in medical school, and that the workshop was relevant to their future medical career (n=68, 98.55%). Attitudes towards PWD significantly improved after the workshop (ATDP-O change: +9.29 points (12.7%), p <0.001). Student reflections included *attitudes*, such as the importance of seeing the person beyond the disability, and a *call for action* towards inclusivity and accessibility of care for PWD.

Conclusion: Students' attitudes were positively affected by involving PWD in the curriculum. Further research is needed for assessing the impact of how a longitudinal PWD curriculum could affect medical trainees and improve social inclusiveness in healthcare practice.

Keywords: *Medical Education, Communication, Persons with Disabilities, Disability, Social Inclusiveness, Student Attitudes, Person Centred Care, Active Learning*

I. INTRODUCTION

Globally, persons with disabilities (PWD) face structural and social barriers to inclusive healthcare. In Singapore, few are comfortable with direct personal interaction with PWD (National Council of Social Service Singapore, 2019).

With respect to medical education, different disability curriculum from didactic lectures to longitudinal patient experiences have been described (Ali et al., 2023). Overall evidence suggests that more frequent and positive contact with PWD increased positive attitudes (Ali et al., 2023; National Council of Social Service Singapore, 2019).

Medical schools, as crucibles of medical professional identity formation, have the responsibility to foster person-centredness toward all patients, including PWD, among her graduates. In July 2022, the National University of Singapore's Division of Family Medicine

developed with PWD, piloted and assessed a four-hour experiential workshop for third-year medical students called “Communication with PWD” in July 2022.

The four-hour workshop was prefaced by pre-event reading materials. A plenary started on site learning, followed by fishbowl discussions where student volunteers took turns to perform a clinical consultation with PWD who enacted scripted role-plays. There was a ratio of one tutor and PWD to a group of ten to fifteen students. Each student would encounter three broad categories of disability (vision, hearing, mobility) during the fishbowl sessions. Students interacted with PWD after each role play. Reflections and debrief by tutors would close the workshop.

This study aimed to evaluate the workshop’s impact on students’ attitudes towards PWD for: (Q1) differences in pre-workshop attitudes towards PWD between male and female medical students; (Q2) within-person changes in students’ overall attitudes towards PWD pre-post workshop; (Q3) associations between pre-workshop attitudes towards PWD and personal experience with PWD; and (Q4) exploration of how the workshop has affected students’ attitudes towards caring for PWDs.

II. METHODS

A. Study Design

This study had a mixed methods design including a pre- and post-intervention survey (quantitative), and reflections (qualitative). Students attending the 3rd and 4th Family Medicine Rotation (January to March 2023) of Academic Year 2022/23 were invited to participate in the study. The questionnaire was administered in person. Students completed the questionnaires independently. A waiver of consent was applied for reflections.

B. Survey

The pre-workshop questionnaire comprised demographic information and the 20-item *Attitude Towards Disabled Persons* (ATDP)-O scale (Yuker et al., 1960). The questions were scored on six-point Likert scale from “I disagree very much” (-3) to “I agree very much” (+3). The post-workshop questionnaire comprised the ATDP-O scale and feedback questions.

We used the original ATDP-O form as it had been used in other studies on medical students (Arabi et al., 2021) and was deemed reliable (reliability coefficient .80) and valid by prior psychometric analyses (Yuker et al., 1960). Performance in local context was assessed through cognitive testing with five randomly selected medical students who were classmates of study participants and excluded from the study sample.

C. Reflections

Student reflection sheets included a single open-ended statement: "Please pen a question or a reflection you’d like to share from the session today". Reflections were transcribed verbatim and de-identified before analysis. All reflections were used to limit selection bias.

D. Data Analysis

Numeric data was analysed by R software (version 4.31). Internal consistency of the scale in our study sample was measured with Cronbach’s alpha. We used two samples independent unpaired t-test to evaluate Q1 (differences in baseline ATDP-O scores between males and females), two samples paired t-test to evaluate Q2 (change in pre-post workshop ATDP-O scores), and two samples independent unpaired t-tests, Welch’s t-tests and Spearman’s correlation tests to evaluate Q3 (difference in baseline ATDP-O scores across different types/levels of contact with PWD). In the evaluation of Q3, two samples independent unpaired t-test was used when two groups have similar sample sizes or similar variances while Welch’s t-test was used when there’s unequal variances or disparate sample sizes between two groups. Spearman’s correlation was used to analyse associations with ordinal variables.

Student reflections were analysed thematically. Four researchers (VLE, VVL, AS, FT) reviewed the data and generated initial codes independently. Multiple discussions were conducted to explore different perspectives and increasingly develop codes. Based on codes generated, potential themes and subthemes were developed over several iterations. Final themes and subthemes were reviewed in relation to the entire dataset.

III. RESULTS

Of 135 students invited, 69 students consented to the study and completed both the pre- and post-workshop questionnaire. The results are summarised (Table 1a and 1b).

Cognitive testing confirmed that students had no difficulties understanding questions nor suggested any edits for clarification. The internal consistency of the scale was $\alpha = 0.72$ (pre-workshop) and $\alpha = 0.78$ (post-workshop).

(Q1) Female gender had a significantly higher baseline ATDP-O scores (p = 0.028).

(Q2) There was a significant improvement of 9.29 points (12.7%) in the ATDP-O score post workshop (p <0.001).

(Q3) Previous experience of training to care for PWD (p<0.001) and previous experience caring for PWD (p = 0.033) had significantly lower baseline ATDP-O scores.

Results	Number (%)	ATDP-O baseline score Mean (*SD*)	Statistics
Overall	**N=69**	72.71 (10.46)	
By age *(Mean* = 21.59, *SD* = 0.96)			Pearson's *r*(67) = - 0.02, *p* = .857
By gender			
Female	37 (53.62%)	75.32 (8.61)	*t*(67) = 2.30, *p* = .025*
Male	32 (46.38%)	69.69 (11.69)	
By ethnicity			
Chinese	56 (81.16%)	73.18 (10.20)	*F*(2, 66) = 1.64, *p* = .201
Indian	12 (17.39%)	69.33 (11.18)	
Others	1 (1.45%)	87.00 (.)	
Self-reported disability			
No	66 (95.65%)	72.74 (10.59)	*t*(2) = 0.14, *p* = .900
Yes	3 (4.35%)	72.00 (8.89)	
Self-reported training to care for PWD			
No	67 (97.10%)	73.06 (10.42)	*t*(7) = 7.45, *p* < .001*
Yes	3 (4.35%)	61.00 (1.41)	
Self-reported frequency of care for PWD (ranked variable ranging from never = 1 to often = 4)			
Never	34 (49.28%)	75.7 (9.5)	Spearman's rho(67) = - 0.26, *p* = .033*
Rarely	22 (31.88%)	69.8 (11.8)	
Sometimes	12 (17.39%)	69.5 (9)	
Often	1 (1.45%)	75 (.)	
Self-reported knowledge of PWD who is important to them			
No	53 (76.81%)	73.57 (10.95)	*t*(67) = 1.24, *p* = .219
Yes	16 (23.19%)	69.88 (8.34)	
Self-rated likelihood of pursuing career in Family Medicine (ranked variable ranging from very unlikely = 1 to very likely = 5)			
Very likely	9 (13.04%)	72.1 (10)	Spearman's rho(67) = 0.03 , *p* = .803
Likely	18 (26.09%)	73.2 (11.5)	
Undecided	37 (53.62%)	73.5 (10.3)	
Unlikely	4 (5.80%)	63.5 (8.9)	
Very unlikely	1 (1.45%)	78 (.)	
Do you feel your education about persons with disabilities in medical school has been adequate so far?			
Agree	1 (1.45%)	-	-
Neither disagree nor agree	19 (27.54%)	-	-
Disagree	42 (60.87%)	-	-
Strongly disagree	7 (10.14%)	-	-

Would you find it important to include education and training on persons with disabilities?			
Strongly agree	23 (33.33%)	-	-
Agree	39 (56.52%)	-	-
Neither disagree nor agree	5 (7.25%)	-	-
Disagree	1 (1.45%)	-	-
Strongly disagree	1 (1.45%)	-	-
Do you feel that the education provided during the Communications with Persons with Disabilities workshop was relevant to your future career as doctors?			
Strongly agree	45 (65.22%)	-	-
Agree	23 (33.33%)	-	-

Table 1a. Baseline ATDP-O scores and curriculum feedback

Results	**ATDP-O score Mean (*SD*)**	**Pre-Post workshop comparison statistics**
Descriptive statistics		
Pre-workshop ATDP-O score	72.71 (10.46)	$t(68) = 8.69$, $p < .001$*
Post-workshop ATDP-O score	82.00 (11.46)	
Difference in ATDP-O scores		
Overall sample	9.29 (8.88)	$t(68) = 8.69$, $p < .001$
By age (*Mean* = 21.59, *SD* = 0.96)		Pearson's $r(67) = -0.06$, $p = .643$
By gender		
Female	8.62 (9.33)	$t(67) = -0.67$, $p = .505$
Male	10.06 (8.41)	
By ethnicity		
Chinese	9.02 (9.45)	$F(2, 66) = 0.15$, $p = .859$
Indian	10.33 (6.21)	
Others	12.00 (.)	
Self-reported disability		
No	9.50 (8.06)	$t(2) = 0.36$, $p = .752$
Yes	4.67 (23.12)	
Self-reported training to care for PWD		
No	9.09 (8.92)	$t(1) = -2.17$, $p = .230$
Yes	16.00 (4.24)	
Self-reported frequency of care for PWD (ranked variable ranging from never = 1 to often = 4)		
Never	8.8 (6.1)	Spearman's rho(67) = 0.05, $p = .678$
Rarely	11.5 (9.1)	
Sometimes	9.4 (10.8)	
Often	-22 (.)	
Self-reported knowledge of PWD who is important to them		
No	10.72 (7.61)	$t(67) = 2.52$, $p = .014$*
Yes	4.56 (11.20)	
Self-rated likelihood of pursuing career in Family Medicine (ranked variable ranging from very unlikely = 1 to very likely = 5)		
Very likely	10.4 (9.2)	

Likely	10.9 (7.8)	Spearman's rho(67) = 0.07, *p* = .547
Undecided	7.9 (9.5)	
Unlikely	11.5 (9.3)	
Very unlikely	11 (.)	

Table 1b. Difference in ATDP-O scores post workshop

Most students found the workshop a positive experience and reported feelings of thankfulness and inspiration towards patient educators. Four themes emerged from the students' post-workshop reflections, of which we highlight those related to attitudes - *Humanizing mindsets* towards PWD (Theme 1) and *Call for action* towards inclusivity and accessibility (Theme 2). The other themes were *Knowledge* and *Skills*, as students included knowledge and communication skills they acquired during the workshop (Appendix 1 and 2).

A. Theme 1 – Humanising Mindset towards Persons with Disabilities

Students expressed attitudes of empathy, sensitivity, and humanising care through viewing PWD as individuals beyond their disabilities. A student reflected

"Being able to speak to members of these respective communities helped me to understand how empowered PWD can be… It is essential that [PWD] are treated as exactly that, [and] not characterised by their disabilities."

On providing care for PWD, students noted the distinction between empathy and sympathy, and highlighted the importance of empathy instead of pity. As summed up by a student,

"Not to sympathise but to empathise. Not to see them and pity them"

B. Theme 2 - Call for Action towards Inclusivity and Accessibility

Concurrent with attitudes expressed in the reflections, students discussed the need to improve inclusivity and accessibility from an individual and societal perspective. One student wrote,

"*As doctors, we need to try our best to alleviate their disease burden, and at the same time, make their journey to accessing healthcare more seamless with less barriers.*"

Beyond self-improvement, students were aware of the need to shift their own perspectives of disability from a medical to a social model. Students also reflected the need for greater national efforts towards societal inclusivity for PWD. A student reflected,

"I think policymakers and organisations should periodically involve PWD to [better] take their needs into consideration as they have the right to integrate into our society just as much as everyone else."

IV. DISCUSSION

Our study showed positive change in attitudes towards PWD among medical students after a workshop with improvement of 9.29 points in the ATDP-O score (Table 1b), reinforced by their post-workshop reflections. To our knowledge, this is the first study in Asia evaluating an educational intervention focusing on communications skills training with PWD. Based on student reflections, the communications workshop was effective in developing knowledge and communication skills, prompting the key attitudes of humanizing care, and a call for action towards societal inclusivity and accessibility towards PWD.

We intentionally had PWD co-designing the workshop and playing key roles as patient educators. Student reflections support these curriculum design decisions. Our work coheres with literature that a contact-based approach with PWD would be impactful: reducing anxiety and improving empathy levels, rather than more theoretical approaches to promote attitudes towards PWD (Arabi et al., 2021).

Our study corroborates the widely reported result that female gender positively influenced baseline attitudes towards PWD in medical students (Satchidanand et al., 2012). A possible explanation is females having a propensity to exhibit more empathetic feelings toward others. There is a greater change in attitudes in males than females after the workshop, but this change is not significant.

In contrast to prior research that consistently associated increased contact with PWD with more positive attitudes (Satchidanand et al., 2012), we found that having previous experience with PWD influenced baseline ATDP-O scores negatively (Table 1a). Moreover, there was a significantly smaller change in ATDP-O scores if they knew a PWD who is important to them (Table 1b). A possible explanation is "caregiver fatigue" due to unavailability of support to allow adequate care for PWD

(Arabi et al., 2021). The type of previous experience may thus be key factors in shaping current attitudes towards PWDs.

This study has several limitations. We cannot determine if positive change in attitudes post-workshop would translate into changes in clinical practice in the future. The survey was not compulsory for students, potentially leading to selection bias. We tried to overcome the selection bias by including all student reflections.

V. CONCLUSION

There was significant improvement in students' attitudes towards PWD post-workshop, as shown through the ADTP-O score and reflection analysis. Medical students benefit particularly from the fishbowl discussions which allows students to interact with persons with disability, growing our future generations of healthcare professionals who humanise care.

Notes on Contributors

Author VLE conceptualised the study, developed the methodology, conducted the investigation, did the formal analysis and visualization of data, wrote the original draft, reviewed and edited the manuscript. Author JJ conceptualized the study, developed the methodology and original draft, reviewed and edited the manuscript. Author AS developed the methodology, did the formal analysis of data, reviewed and edited the manuscript. Author VVL did the formal analysis of data, wrote the original draft, reviewed and edited the manuscript. Author LSH did the formal analysis and visualization of data. Author FT did the formal analysis, reviewed and edited the manuscript. Author JMV supervised the conceptualization and methodology of the study, reviewed and edited the manuscript. VLO supervised the conceptualization of the study, developed the methodology, reviewed and edited the manuscript. All authors have read and agreed to the published version of the manuscript.

Ethical Approval

The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Institutional Review Board of the National University of Singapore on 11 November 2022 (NUS-IRB-2022-608).

Data Availability

Quantitative data repository can be freely accessed at: https://doi.org/10.6084/m9.figshare.24013134

Qualitative data repository can be freely accessed at: https://doi.org/10.6084/m9.figshare.24051195

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Declaration of Interest

Authors VLE, JJ and VLO are tutors in the "Communications with Persons with Disabilities" workshop. There are otherwise no other conflicts of interest.

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*Vivien Lee
1E Kent Ridge Rd,
Singapore 119228
Email: vivienl@nus.edu.sg

Appendix 1. Subthemes, categories, and example quotes for the theme, knowledge involving disability

Sub-themes	Categories	Example quotes
Understanding best communication practices with PWD	FRAME	*"Familiarise [with patient]'s communication* *Rate (reduce rate of speech)* *Assist (how to best assist patient)* *Mix (mix communication styles)* *Engage (respect patient's autonomy)"*
	Non-verbal communication	*"If [PWD] can't sense our body posture (e.g., when we make eye contact, nod, lean forward], we need to be more intentional in making the other party comfortable through our tone [and] words."*
Understanding disability	Disability is a spectrum	*"All patients are different, don't assume how you can help one patient would be best for another"*
	Recognising myths regarding PWD	*"I was able to find out directly the best ways to approach PWD as well as iron out common misconceptions, assumptions and poor practices that doctors and general public may have."*
	Understanding terminology	*"There is a [difference between] hearing loss and being deaf… not everyone uses sign language."*
	Nuances of sign languages	*"Sign language might not always be the most suitable as critical information might be missed."*
	Parasports	*"I love how there are ways for PWD to engage in sports e.g., soundball for the blind [and] boccia for individuals who are unable to walk/move much."*
Holistic approach	Obtain comprehensive history	*"Explore psychological factors. Find out about nature of job to understand how current symptoms would affect it and work out measures to alleviate it... Find out how patient is coping financially to determine if it is necessary to reach out for financial support."*
	Consider accessibility	*"I had the chance to hear about the different ways disabilities could affect daily life (e.g., using phones, computers, taking public transport, travelling etc.)"*
	Consider ICE	*"It is important to… explore [patient's] ideas, concerns & expectations. This can help [allow] us to better tailor our treatment plans for the [patient]."*
	Consider external support	*"Ask about caregiver. What is the role of the caregiver in managing their disability? Get the caregiver involved. They may be able to fill the gaps in management."*

Managing disability in clinics	Good clinical practices	*"Have patience and spend the time to explain the diagnosis to [patients], don't just summarise to them."*
	Recognising assumptions	*"Do not assume their level of assistance (e.g., signing for hearing impaired from the get-go). Ask them instead first."*

Appendix 2. Subthemes, categories and example quotes for the theme, improving communication skills

Sub-theme	Categories	Example quote
General non-verbal communication skills	Active listening	*"An important key takeaway from this session was to practice active listening and to be present when talking to PWD…"*
	Be patient	*"Be patient and act normal in front of the patient, prioritise patient comfort while doing your job."*
	Do not pretend to understand	*"Don't pretend to understand patients to avoid misunderstanding."*
	Be more intentional with communication	*"If [PWD] can't sense our body posture, we need to be more intentional in making the other party comfortable through our tone [and] words."*
General verbal communication skills	Ask functional impairment	*"Important to ask about functional impairment, especially day-to-day activities that we often overlook."*
	Be confident to ask	*"Could I understand a bit more about your disability? Be direct about your questioning, it doesn't mean you're being insensitive."*
	Check-in regularly	*"Throughout consult, ask [if there are] any questions [or] concerns. Check in for feedback."*
	Clarify	*"Listen carefully to what [patient] says and actively clarify."*
	Encourage	*"Encourage [patients] to go back to previous activities [and] suggest ways to go about doing them."*
	Involve others who can help	*"Caregivers can sometimes fill in the gaps where the PWD might not share with the [doctor] due to pride or age."*
Communication skills for persons with hearing disabilities	Determine degree of hearing loss	*"Establish if hearing loss or total deafness."*
	Accept awkward pauses	*"Awkward pauses of silence when writing [or] typing is acceptable, as long as there is effective communication."*
	Ask what is the best way to communicate	*"Ask for preferred mode of communication. Lip reading, writing [or] sign language."*
	Clearly enunciate	*"Still enunciate what you are communicating, even if [patient] prefers visual aids."*
	Do not shout	*"Hearing aid does not isolate [and] amplify speech alone, it also increases the ambient sound, so shouting [or] increasing the loudness does not make it better."*
	Maintain eye contact	*"Face the [patient] directly, instead of talking to interpreter"*
	Reduce rate of communication	*"If [patient is] not educated [or] can't read, speak slowly [and] use images."*
	Use alternative communication methods (e.g., lip reading, hand motions, etc.)	*"Enable [PWD] to lip read if possible before sign language [or] written prose."*

Communication skills for persons with mobility disabilities	Assess function	*"Don't make assumptions about the condition. Ask: How is your function? Not: How long have you been paralysed?"*
	Assess suitability of mobility aid	*"Wheelchair is personalised. Ill-fitted wheelchair can cause pain bilateral shoulder pain."*
Communication skills for persons with vision disabilities	Determine degree of vision impairment	*"Some pts with visual impairment may not have total loss of vision. Can start consult by asking kindly how much they can see…"*
	Ask for permission to touch	*"Ask for permission before touching patient to demonstrate."*
	Explain to patient what you are doing	*"It's good to verbalise what you're doing so [patients] know what's going on around them. "*
	Use alternative communication methods (e.g., tactile method, sensory details)	*"When explaining wrist pain, ask [patient] how they [would] like to communicate, tell [patient] before you touch them [and] demonstrate on non-painful hand!"*