RESEARCH ARTICLE

To what extent does a pharmacy curriculum foster diversity and inclusion through paper-based case scenarios?

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Abstract

Background: There is increasing awareness of diversity and inclusion needs within health and education systems to help address access and equity issues for minority groups. Although these calls are well known, there is little guidance for those working within these systems to create meaningful change. The purpose of this study was to critically review case-based teaching material within the authors' programmes through the lens of equity, diversity, and inclusion. **Methods:** A document analysis of clinical workshop cases extracted from all integrated therapeutics courses administered in 2020 was conducted. **Results:** Sex, age, and employment status were most commonly presented in cases (84.0%, 97.1%, 49.0% respectively). The majority (90.0%) of cases did not have ethnicity defined. The overwhelming majority of cases did not have living situation (68.3%) or sexual orientation (78.0%) defined. **Conclusion**: Case-based teaching material within a pharmacy programme was largely undefined according to patient demographics and diversity markers. Findings support the notion that teaching material may have a contributory role towards systemic racism, prejudice, and implicit bias.

Introduction

There are increasing calls for diversity and inclusion responses within health and education systems (Arya *et al.*, 2020; Accreditation Council for Pharmacy Education, 2021). These calls are largely based on a longstanding history of systemic racism, presence of implicit biases, and examples of both intentional and unintentional discrimination present within society against minority groups (Baciu, Negussie, & Geller, 2017; Borrell *et al.*, 2021; Lavizzo-Mourey, Besser, & Williams, 2021). Racial stereotyping of patients, for example, contributes to systemic racism and in turn, creates access and equity disadvantages for racial minorities. Although these effects are well known, there is little guidance for those working within these systems to create meaningful change. Strategies to date have largely focused on developing

cultural awareness and effective communication strategies at the individual level within health curricula but little effort has been directed towards identifying and improving system factors to help support change (Lavallee *et al.*, 2014).

Arya and colleagues recently published a foundational paper calling for urgent change to support the dismantling of systemic racism within the pharmacy profession (Arya *et al.*, 2020). 11 recommendations were proposed that are aimed towards supporting professional change and while focused on systemic racism, many can be applied to improving equity, diversity, and inclusion initiatives across other minority populations (e.g. gender and sexual minorities). In particular, the need for awareness, creation of spaces for open dialogue, and sharing of lessons

learned may be most applicable across minority groups and also relevant for consideration by educational institutions. Additionally, calls from both pharmacy and medical education support critical review of institutional policies and educational materials to ensure institutional and teaching practices are safe, equitable, and foster inclusivity (Arya *et al*., 2020; Lim *et al*., 2021).

As education of health professionals evolves, there must be an increased focus on teaching material to ensure it is free from implicit biases that train students to assume 'mainstream' unless otherwise specified. For example, a case written as, 'a 78 year old married male presents to the clinic with a productive cough', may be interpreted as a white, cis-gender, heterosexual male (e.g. aligned with mainstream 'dominant' populations). A lack of clarity provided within case material could result in dominant student populations associating case material with mainstream populations and only considering minority population health when specifically referred to. This may contribute to attachment of negative stereotypes to non-mainstream populations (Greenwald & Banaji, 1995; Greenwald *et al*., 2002). Minority groups may then be disadvantaged by members of the dominant mainstream group due to two main factors: 1) minority status, 2) negative societal stereotypes (Chambers *et al*., 1998; Katz, Joiner, & Kwon, 2002).

Based on the need to address systemic racism and discrimination within educational institutions and the known contributory influence of teaching materials that may facilitate negative attitudes and stereotyping, a critical review of programme materials is warranted. Although there is no known formula for the 'right' amount of diversity within teaching materials, it is the authors perspective that students should be presented with cases that reflect societal patterns. Minority populations should therefore be: 1) represented and 2) represented fairly without always or almost always assigning a specific characteristic to the case that could result in stereotyping (e.g. Human Immunodeficiency Virus for gay male cases, low socioeconomic status for Indigenous cases) (Muntinga *et al.*, 2016). Cases should also have enough definition and clarity to avoid defaulting students to always assuming 'mainstream' unless otherwise specified.

The purpose of this study was to critically review case-based teaching material within our programme through the lens of equity, diversity, and inclusion. The specific aims were to identify to what extent diversity was represented within case materials and to determine if the diversity included adequately represented the full spectrum of minority populations.

Methods

Study design and setting

This was a document analysis of patient cases extracted from small group learning sessions that occurred in 2020 across the Bachelor of Pharmacy curriculum at the University of Otago in New Zealand (Bowen, 2009). The Bachelor of Pharmacy programme is a four-year degree with three professional years of study. On-campus teaching events are generally aligned through introductory didactic lectures, small-group case-based learning exercises, and practical professional skills laboratory exercises. For the purposes of this study, case material was extracted only from small-group case-based learning exercises.

New Zealand is a diverse country made up of 4.7 million people. According to the 2018 census data, the country is made up of New Zealand European (70.0%), Māori (16.5%), Pacific Peoples (8.0%), Asian (15.0%), and other ethnic groups.(Statistics, 2013a) There are over a million people living in Aotearoa New Zealand with a disability (24.0% of the population) (Statistics, 2013b). There are roughly equal numbers of males and females, yet no official data is known for sexually and gender diverse individuals.

Data collection

Case-based learning material was extracted from all small-group case-based learning exercises conducted during the three professional years of study. Cases were included in the analysis if they included at least one piece of demographic or social data (i.e. age, gender or sex, height, weight, body mass index, occupation, allergy status, alcohol use, smoking status, illicit drug use, exercise, diet, relationship status, living arrangement, or sexual orienta-tion). Cases were excluded if no demographic information was provided for the person (e.g. only the medical condition and/or medications were provided). All case data were extracted into a Microsoft Excel spreadsheet.

Data analysis

Once extracted, case data was reviewed and categorised according to the following factors:

• Demographic characteristics: Age, sex, ethnicity, employment status, employment type, living situation, sexual orientation, and relationship status.

• Clinical Characteristics: Medical conditions, number of medicines prescribed, allergies, height, weight and Body Mass Index (BMI).

- Social Characteristics: Smoking status, use of alcohol and/or illicit drugs, and frequency of exercise.

If a case did not mention a characteristic listed above, it was recorded as 'undefined'. If there was a lack of specificity about the factors, they were also recorded as undefined. Examples of these included specifying a partner but without mention of the partner's gender (sexual orientation = undefined), specifying he or she was assumed to represent gender unless the case specified the patient was transgender, ethnicity was classified as the priority ethnicity (as per the Ministry of Health guideline, 2010) if multiple ethnicities given, and ethnicities for names typically associated with specific cultural groups were also classified as undefined unless ethnicity was explicitly stated. Categorisation of data was completed by one of three investigators (LK, AW, or AN) but reviewed and discussed in person by all investigators. Discrepancies in categorisation were resolved using discussion and consultation with the full investigator team.

Statistical analysis

Categorised data was summarised using descriptive statistics (proportion of all cases) across all factors identified. Data was also stratified per professional year. Medical conditions, social factors, and other relevant case data was also summarised descriptively for each minority group identified.

Data analysis

Three investigators (LK, AN, AW) met to review approximately 20% of the dataset to develop an initial coding framework specific to research questions. LK, AW and AN then independently coded all data according to this framework. The investigator team then met for a final review of coding. Discrepancies were resolved during an in-person review.

Descriptive analytics were undertaken using Microsoft Excel.

Results

208 cases from 62 workshops met the inclusion criteria for the document analysis.

Demographic characteristics

Ethnicity was infrequently defined with 10.0% of cases ethnicity specified (Table I). Out of 208 cases, there were five (2.4%) and four (1.9%) of cases where the patient was defined as Māori or Pacific Peoples, respectively. Sexual orientation (78.0%), living situation (86.0%), and employment status (51.0%) were undefined in the majority of cases. Cases where employment was stated, the majority of cases had either High School of University education (17.0%), or were working in business management or administration roles (3.3%). Overall, there was a good variety of employment type stated in cases.

Clinical characteristics

Medical condition(s) and number of medicines were well defined variables (Table II). Hypertension, hyper-cholesterolemia/dysrythmias, thyroidism, type 2 diabetes, and bipolar disorder were the top five most common conditions presented. In most cases, patients were prescribed one to four medicines.

In cases with Māori patients, 80.0% had hypertension, 60.0% hypercholesterolaemia, 60.0% type 2 diabetes, and other conditions. 100% of Pacific people patients had hypertension, 75.0% hypercholesterolaemia, 75.0% type 2 diabetes and 50.0% had gout. These cases were all condensed into one third year course.

Case based scenarios of chronic obstructive pulmonary disease (100%), myocardial infarction (67.0%), and dysrhythmia (71.0%) cases were presented in male patients. All oncology patients (except breast cancer) were either male or undefined. Type 1 diabetes mellitus (71.0%) cases were presented in female patients. Schizophrenia cases were male (63.0%) or undefined (37.0%). Of cases where gender was indicated as 'other', the only medical condition presented was for gender affirming hormone therapy.

Patient height (84.6%), weight (78.0%), BMI (83.0%) and allergy status (65.0%) were undefined in the majority of cases.

Social characteristics

Overall, social characteristic information was not often presented (Table III). Smoking status was presented in 21.0% of cases, alcohol in 16.0% of cases, illicit drug use in 27.0% of cases, and exercise status in 13.0% of cases.

Table I: Demographic characteristics

Age	Number	Percentage
Undefined	6	2.9%
0 - 20	35	16.8%
21 - 40	62	30.0%
41 - 60	51	24.5%
61 - 80	48	23.1%
81	6	2.9%
Gender		
Undefined	34	16.0%
Male	87	42.0%
Female	85	41.0%
Other	2	1.0%
Ethnicity		
Undefined	187	90%
European/Other	10	4.8%
Māori	5	2.5%
Pacific Peoples	4	1.9%
Asian	2	1.0%
Employment status		
Undefined	108	51.0%
Child (0-12)	17	8.0%
Student (13+)	12	5.7%
Unemployed	5	2.4%
Retired	11	5.2%
Employed	55	27.7%
Total	**208**	**100%**
Employment type		
High School/University Education	10	17.0%
Agriculture, Food, Natural Resources	2	0.9%
Architecture and Construction	3	1.4%
Arts, Audio/Video Technology, Communications	3	1.4%
Business Management and Administration	7	3.3%
Education and Training	4	1.9%
Finance	4	1.9%
Government and Public Administration	0	0.0%
Health Science	6	2.8%
Hospitality and Tourism	6	2.8%
Human Services	1	0.5%
Information Technology	1	0.5%
Law, Public Safety, Corrections, Security	3	1.4%
Manufacturing	1	0.5%
Marketing, Sales, Service	1	0.5%
Science, Technology, Engineering, Mathematics	4	1.9%
Transportation, Distribution, Logistics	1	0.5%
Not defined	154	72.6%
Total	**212**	**100%**
Living situation		
Available	46	31.7%
Not defined	99	68.3%
Total	**145**	**100%**
Sexual orientation		
Available	20	9.6%
Not defined	189	90.4%
Total	**209**	**100%**
Relationship status		
Available	30	20.4%
Not defined	117	79.6%
Total	**147**	**100%**

Table II: Clinical characteristics

Cardiovascular	Number	%
Hypertension	27	8.4%
Hypercholestralaemia	14	4.3%
Dysrythmia (Atrial Fib)	14	4.3%
Other: e.g., DVT/HF/MI/angina	16	5.0%
Respiratory		
Asthma	11	3.4%
COPD	4	1.2%
Other: e.g., Pneumonia, lung disease, klebsiella pneumonia	4	1.2%
Diabetes		
Type 1 Diabetes	7	2.2%
Type 2 Diabetes	14	4.3%
Gestational Diabetes	1	0.3%
Renal		
Acute Kidney Injury	3	0.9%
Kidney Disease	7	2.2%
Urinary Tract Infection/pyelonephritis	5	1.6%
Thyroid		
Thyroidism	16	5.0%
Graves	1	0.3%
Addison's Disease	1	0.3%
Cancer		
Breast	3	0.9%
Lung	3	0.9%
Leukaemia/Lymphoma	3	0.9%
Other: e.g. Prostate and colorectal	3	0.9%
Dermatology		
Infection e.g. Cellulitis, oral candidiasis, bacterial conjunctivitis, otitis externa, otitis media	7	2.2%
Other: e.g. Mouth ulcer, sunburn, uticaria	4	1.2%
Acne	4	1.2%
Atopic Dermatitis	3	0.9%
Gastrointestinal		
GORD/H-pylori/Dyspepsia	12	3.7%
Diarrhoea	10	3.1%
Other: e.g., Constipation, IBD	10	3.1%
Muscoloskeletal		
Osteoarthritis	8	2.5%
Gout	5	1.6%
Other: e.g., Arthritis and osteoporosis	3	0.9%
Mental Health		
Bipolar Disorder	13	4.0%
Schizophrenia	8	2.5%
Depression	7	2.2%
Other: e.g. mania, personality disorder, anxiety, insomnia, epilepsy, dementia	12	3.7%
Other		
Undefined or no medical condition	12	3.7%
Wounds	10	3.1%
Hayfever	9	2.8%
Men's/Women's health**,** e.g. Dysmenorrhea, pregnancy and breast feeding, menopause, gender affirming hormone therapy, erectile dysfunction/BPN	8	2.5%
Infection related e.g. HIV, hepatitis, pyrexia	8	2.5%
Other**:** e.g. Sciatica, glaucoma, iron deficiency/anaemia, adverse drug reaction, fracture, headache/migraine, nausea/ vomiting, stroke	13	4.0%
Total	**324**	**100%**

Table II: Clinical characteristics (continued)

Number of Medicines		
Undefined	25	12.0%
0	29	14.6%
1-4	127	61.1%
5-9	25	12.1%
10	2	1.0%
Total	**208**	**100%**
Allergy Status		
No known allergy	46	21.8%
Medicine or food allergy	23	10.9%
Other allergy	4	1.9%
Not defined	138	65.4%
Total	**211**	**100%**
Height		
Available	32	15.4%
Not defined	176	84.6%
Total	**208**	**100%**
Weight		
Available	46	22%
Not defined	162	78%
Total	**208**	**100%**
Body Mass Index		
Available	36	17%
Not defined	172	83%
Total	**208**	**100%**

Table III: Social characteristics

Smoking	Number	%
Undefined	163	79.1%
Smoker	16	7.8%
Used to smoke	8	3.9%
Non-smoker (Never)	19	9.2%
Total	**206**	**100%**
Alcohol		
Undefined	174	83.7%
Drinks regularly	19	9.1%
Drinks occasionally	7	3.4%
Does not drink	8	3.8%
Total	**208**	**100%**
Use of Illicit Drugs		
Yes	74	27.0%
No	205	73.0%
Total	**279**	**100%**
Exercise		
Undefined	182	87.1%
Regularly	18	8.6%
Occasionally	2	1.0%
None	7	3.3%
Total	**209**	**100**

Discussion

This study critically reviewed case-based teaching material within the authors programme through the lens of equity, diversity, and inclusion. Results of this study indicate that diversity was not prevalent within case materials, indicating minority populations were not well represented. Gender, age, and employment status, and employment type were well presented in case material, however the majority of cases did not have ethnicity defined, and the overwhelming majority of cases did not have living situation or sexual orientation defined. Results from this study demonstrate that while teaching materials may not be directly contributing to stereotypes of minority groups, they may be indirectly contributing by not providing enough detail to allow students to visualise patients outside of their own cognitive norms and groupings (Liberman, Woodward, & Kinzler, 2017).

Racism and implicit bias have a complex and multi-faceted effect that has an influence on health outcomes and inequities. Cormack and authors describe racial/ethnic bias amongst individual health providers as 'a manifestation of a broader context of pervasive exposure

to racism and racialised discourses at a societal level', therefore health educators could be unintentionally contributing to this, with repetition of mainstream stereotypes (Cormack *et al.*, 2018). The lack of detail within the case materials could unintentionally cause students to make assumptions about the case, based on their exposure to racism and other prejudices within society, which could be largely influenced by mainstream values. For medical institutions to continue to play the important role of eliminating health inequities, action must be taken to ensure diversity and inclusion is represented and free from bias within the case materials (Jones *et al.*, 2019). Emphasis on this should be just as great as teaching clinical knowledge.

In contrast to demographic detail, medical conditions and medications were almost always well described. Hypertension, hypercholesterolemia, thyroid disorders, type 2 diabetes, and bipolar disorder were the top five most common conditions presented. And in most cases, patients were prescribed one to four medicines. Results also show that these most common conditions were not equitably spread across a diverse population, demonstrated by Pacific Peoples cases consistently having high blood pressure, hypercholesterolaemia, diabetes, and gout. Moving forward, educators must be aware of the conditions assigned to case patients from minority populations to ensure that stereotypes are not reinforced. With respect to Pacific Peoples described above, the inclusion of all cases having a primary or secondary condition of hypertension may prompt students to develop stereotypes by continued reinforcement of characteristics presented for a given population (Wild *et al.*, 2021).

Social characteristics were also poorly defined in the majority of cases. If educators omit information on smoking status, illicit drug use, and alcohol use to students, this results in these groups not being visible, and therefore the health benefit of addressing social influences of health may be lost. In order to ensure students develop a process to think holistically about patients, rather than simply narrow in on a therapeutic problem, representation of this information could be valuable to describe more frequently throughout case descriptions.

To address the omitted demographic, clinical, and social characteristic information and therefore the potential for assumptions to be made by the student, there is an argument for providing cases or 'models' that encompass a full spectrum of minority populations is a concept supported by social cognition theory (Liberman *et al.*, 2017). Social cognition theory states that individuals use

categorisation to cope with large amounts of, and the complexity of, information presented to them. For example, if a student continually receives cases that associate a specific population with a condition or characteristics (e.g. Pacific Peoples and hypertension), students may ultimately categorise all Pacific Peoples in this way as they encounter patients and complexity in practice. Doing so could divert their attention away from other ailments or screening needs by shifting their focus towards a characteristic inappropriately deemed to be a 'population norm'. The same may hold true for demographics aside from ethnicity, including sexual health needs for sexually diverse individuals, as well as assumptions of health literacy for those with disabilities or language barriers. Working towards creating cases that accurately and fairly reflect diversity within society should therefore be a priority moving forward.

Findings of this study call for practical implications aside from a more conscious approach to case creation. Ongoing and sustained professional development for all staff is required to ensuring the curriculum is diverse and inclusive, because claiming to be 'fully' culturally competent or culturally safe is likely not achievable. Professional development activities can be aligned with those called for by Arya and colleagues and designed to stimulate greater reflection and awareness of systemic racism, prejudice, and implicit bias within health and education systems. Approaches of diversity teaching to students may also need to be reviewed. Educators are quick to focus on population-level facts and statistics (that largely inform case development) but training must include discussions about diversity, assumptions made about populations, and the need to provide person-centred care that takes into account each individual's own health status and priorities. Findings of this study also support a recommendation for programmes to regularly review teaching material through the lens of diversity and to create action plans as potential issues are identified. In response to the findings of this study and the recommendations by Arya and colleagues, the authors action points moving forward include:

1. Share findings of this analysis with faculty and staff by facilitating forums of open dialogue and discussion

2. Blueprint teaching materials to better reflect society and population diversity

3. Preform regular reviews of teaching materials to ensure minority populations are represented fairly and fully

Findings of this study support future research initiatives. The impact of providing undefined cases to students

should be explored. For example, if a case does not specify ethnicity, sexuality, or gender identity, how do students visualise the case patient when moving through therapeutic exercises. Do students simply assume mainstream characteristics? Or, do different groups of students categorise according to their own experiences and identities? Secondly, how does inclusion of distinctive characteristics modify the way students approach the case? Do students instinctively assume population-level assumptions and stereotypes? Do they come into conflict or tension if the cases are not represented according to their own cognitive categorisation? Finally, does repetitive exposure to cases representing the full spectrum of diverse populations work to change assumptions and the way that students approach these cases?

Limitations

This study has limitations that should be addressed. Cases were extracted from small group case-based learning sessions but did not include cases developed for role plays or other exercises within the professional skills laboratory or other teaching events such as lectures. As these cases were largely communication focused, they lacked the details required to meet the inclusion criteria for this study. Secondly, this study was limited to one institution's experience and therefore specific findings are not transferable across settings. The conclusions and action plans, however, provide a framework for others to undertake their own, similar research. Finally, the undefined category for ethnicity may be over-represented as some case writers may have assumed that using a specific name may represent one's ethnicity (e.g. Maori, South Asian). These could not be included as such due to the lack of applicability across all ethnicities.

Conclusion

This study found that case-based teaching material within a pharmacy programme was largely undefined according to patient demographics and diversity markers. Findings support the notion that teaching material may have a contributory role towards systemic racism, prejudice, and implicit bias known to occur within educational systems. In efforts to dismantle systemic racism, prejudice, and implicit bias within the profession, institutions should review teaching material and work towards accurately representing diverse populations free from assumptions and stereotypes.

Contributor statement

LK, KW, AS, JT conceived and designed the study. LK, AN, TAW collected the data. AN, LK, AS, TAW analysed and interpreted the data. All authors contributed to drafting the manuscript. KW, AS, LK, JT revised the manuscript critically for important intellectual content. All authors approved the final version of the manuscript for publication.

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Appendix

Short Case Based Scenario
Peter Radley

Peter is a 66-year-old who was diagnosed with paroxysmal atrial fibrillation 2 weeks ago. The last few weeks Peter has been experiencing cold hands and feet, and having vivid nightmares, both of which are new for him.

Current medications
•Cilazapril 2.5 mg PO daily
•Amlodipine 10 mg PO daily
•Metoprolol CR 95 mg PO daily
 Allergy status: NKDA

Long Case Based Scenario
Mr Chin

About one year after his diagnosis of angina, Mr. Chin is bought to the Dunedin Hospital ED by ambulance with chest pain.

The pain developed suddenly whilst he was at the Botanical Gardens with his son Eric and his grandchildren. He used two doses of his GTN spray, 5 minutes apart but this gave no relief (usually would settle the pain quite quickly). He also felt short of breath and was sweating profusely. Eric called for an ambulance, which arrived within 30 minutes.

Current medications
•GTN Spray, 400mcg/puff: 1 puff SL prn
•Aspirin 100mg EC, mane
•Atorvastatin 10mg, mane
•Cilazapril 2.5mg, mane
•Metoprolol 23.75mg, mane
Family history: Father died of a myocardial infarction at 62 years

Social history
•Current smoker, 10 cigarettes per day
•3 double whiskies (6 units of alcohol) daily
•5-6 cups of coffee daily (to help have energy to look after the grandchildren)

Observations and laboratory results
On admission: HR 100 beats/min
                             BP 140/80mmHg
                             ECG: ST elevation in V3, V4 and V5 (up to 3mm)
                             Troponin I and Troponin T are normal
Working diagnosis: STEMI
Mr. Chin is transferred for angiography +/- intervention.

Findings: He had 100% occlusion of the LAD and 70% occlusion of the left circumflex. All major coronary arteries visualised had significant fatty deposits present.

Intervention: DES to both LAD and LC. No complications during the procedure.