

BEME Collaboration

Protocol

What are the features of targeted or system-wide initiatives aimed at increasing diversity in health professions trainees? A BEME systematic review

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**Key Words:**

Diversity, under-represented populations, health professions education, recruitment, undergraduate

**Background:**

Disparities in access to healthcare persist despite efforts to improve care for underserved patients. This group includes but is not limited to those who are ethnic minorities, are of low socio-economic status, lack healthcare insurance and recent immigrants. A shortage of health care professionals practicing in communities where populations experiencing health inequities live is a major contributor and has led to calls for increased social accountability by the health professions education community (Cooke, Irby, & O'Brien, 2010; Future of Medical Education in Canada, 2010; General Medical Council, 2009; Komaromy et al., 1996; The Future of Medical Education in Canada Postgraduate Project, 2010). The World Health Organization (WHO) defines social accountability of health professions' schools as "the obligation to direct their education, research and service activities towards addressing the priority health concerns of the community, region and/or nation that they have a mandate to serve. The priority health concerns are to be identified jointly by governments, health care organizations, health professionals and public" (Boelen C. & Heck J.E., 1995). By identifying and responding to the needs of the community, health profession training programs play a major role influencing the changes in the health care system that are necessary to ensure not only an effective and efficient system, but equally as important one that is accessible and equitable to all. The call for greater social accountability within medical education has led to the development of new medical schools with this focus (e.g. Northern Ontario School of Medicine in Canada and James Cook University in Australia) and attempts at restructuring within established health professions schools worldwide (Worley & Murray, 2011).

One such response has been to increase diversity among the health professions student body and workforce. In a broad sense, diversity within the institution of health care refers to those populations that are under-represented in the health profession relative to their numbers in the general population. Little systematic documentation regarding what actually defines a diverse population is available. In many instances, demographic data from health trainees identifying markers of diversity in these populations is likewise not available. Dimensions of diversity have traditionally focused on gender, socioeconomic status, urban/rural status and ethnicity or race. There is a paucity of data regarding other

dimensions such as disability, gender identity, and sexual orientation (Young et al., 2012). Yet it is well recognized that in order to serve the complex health care needs of a diverse population and meet social accountability objectives, the health workforce must also be diverse (Future of Medical Education in Canada, 2010). Diversity conscious policies and programs have been implemented to achieve this goal and yet still lag behind population demographic shifts and changes.

The evidence to date suggests that achieving greater diversity has led to its intended benefits of improving health access and equity. Several studies, including a systematic review of the patient care related benefits of a diverse health professional work force, found that health professionals (particularly physicians) from populations that experience health inequity are more likely to work in underserved areas and are more likely to treat patients with health inequities (Cantor, Miles, Baker, & Barker, 1996; Komaromy et al., 1996; Moy & Bartman, 1995; Rabinowitz, Diamond, Veloski, & Gayle, 2000; U.S. Department of Health and Human Services, 2006). Patients from under-represented populations tend to receive better interpersonal care from health professionals from the same racial or ethnic background and also report greater satisfaction when they receive care from these physicians (Cooper-Patrick et al., 1999; Marrast, Zallman, Woolhandler, Bor, & McCormick, 2014; Saha, Arbelaez, & Cooper, 2003; U.S. Department of Health and Human Services, 2006). Finally, medical students from diverse backgrounds report increased desire to work in underserved areas and with patients from under-represented populations or who have health inequities (Association of American Medical Colleges, 2005). The benefits of a diverse medical class are not just limited to workforce considerations or patient satisfaction. A large survey of American medical students concluded that student body ethnic diversity within American medical schools is associated with outcomes consistent with the goal of preparing students to meet the needs of a diverse population (Saha, Guiton, Wimmers, & Wilkerson, 2008).

In conceptualizing this area of research we begin by drawing on Bandura's self-efficacy learning theory. This conceptual framework purports that the key elements essential for learning are: 1) experience; 2) modeling; 3) social persuasion; and 4) physiological

factors (Bandura A., 1977). In relation to this project the first three elements are key to the diffusion of positive change through increasing diversity in health professions training programs. For example, in one large American study, students attending more racially diverse medical schools rated themselves as better prepared to meet the needs of a diverse population compared to those who attended less diverse schools (Saha et al., 2008). Expanding on this, we also draw on the concepts of “critical mass” and “social networks”. Critical mass, as it pertains to medical school diversity, has been defined as the minimum number of under-represented population students that are needed to produce a change in the group interaction and educational experience. However, as Elam, Stratton, Hafferty and Haidet (Elam, Stratton, Hafferty, & Haidet, 2009) argue, the concept of critical mass alone conceptualizes a quantitative threshold in order to elucidate a qualitative change. Instead, Elam *et al.* suggest that achieving the goals of a critical mass of diverse students is linked to a critical mass of their social networks. Within this framework, critical mass is “conditional on the underlying meanings and self-perceptions individuals assign via the social roles they occupy, the social groups to which they belong” and reasonably the subsequent interactions among these groups.

While there are many ways to approach this area, we categorize interventions aimed at increasing diversity into the following groups: 1) those intended to promote recruitment for application by a more diverse population 2) those intended to support success in admission by a more diverse population 3) those intended to support retention and completion of programs by a more diverse population and 4) those intended to ensure a more diverse population maintain practice. This review will focus on the first two of these areas as we hypothesize that initiatives at these early stages will have the greatest impact on diversity as they represent the critical rate limiting steps for entry into health professions programs. We also suspect initiatives in these two early steps will be more homogeneous allowing for greater comparison and generalization of key concepts.

While the evidence base demonstrating the benefits of increasing diversity in the health professions is compelling, syntheses of primary research evaluating strategies aimed at promoting the recruitment and admission of students from traditionally identified under-

represented groups is limited to date. Loftin, Newman, Gilden, Bond and Dumas (Loftin, Newman, Gilden, Bond, & Dumas, 2013) provided a synthesis of initiatives used to facilitate the recruitment, retention, and program completion of under-represented nursing students. This review included studies that reported on the implementation and evaluation of initiatives designed to increase academic success and program completion of under-represented nursing students in the United States. Building on this review, we wish to expand to include a broader spectrum of health professions programs, a wider definition of diversity and to include studies conducted outside of the United States. We also intend to focus our review on the recruitment and admission of under-represented students whereas the previous review was more focused on retention of already admitted students. To date such a comprehensive review of initiatives has not been preformed.

We recognize that other professions such as teaching, engineering and the criminal justice system may also desire increased diversity in their training programs. However, health professions curriculum planners do not have a resource that evaluates such initiatives that may be specific to their needs. For example, applicants for many health professions programs require preparation for highly competitive admissions processes that focus on academic performance and suitability for the subsequent high stakes patient care and workplace based learning (Amin & Eng, 2009). These processes provide different and significant barriers and challenges to potential applicants from under-represented groups in health professions than those in other non-healthcare related professions. In addition, the WHO recommendations regarding social accountability within health care clearly recognize healthcare as a unique and opportune setting to improve health inequity through workforce diversity (Boelen C. & Heck J.E., 1995).

Although it is clear that initiatives to enhance diversity are increasing, it is not clear whether these efforts are translating into a more diverse student body (Price et al., 2005; Saha et al., 2003). For this reason, we seek to determine which initiatives aimed at increasing under-represented populations are associated with meeting the desired outcomes of increasing the diversity of this population within the health professions student body. Such a review may enable policy makers and funders to aim future efforts

toward those initiatives with outcomes that successfully result in increased under-represented student recruitment and admission into health professional programs. Further, as we intend this review to inform and be used both locally and globally by policy makers at various health professions programs and schools, we will focus this review on initiatives that schools administer or influence rather than those under the remit of higher levels of government or external organizations.

**Objectives of the review:**

We will perform a systematic review of the literature to identify the features of initiatives that seek to increase diversity within health professions programs. Where possible, we will determine which initiatives aimed at increasing under-represented populations are associated with meeting the desired outcomes of increasing the diversity of this population within the health professions student body. It is our intention that this new knowledge will inform the development of both local and global future initiatives and help current programs identify which initiatives, and specific features of these initiatives, may be most suitable.

**Methods:**

For the purpose of this review, diversity is defined by such dimensions as ethnicity and religion, gender and sexual orientation, geographic origin and socioeconomic status (Future of Medical Education in Canada, 2010). Under-represented populations are defined as any population experiencing health inequity that are under-represented in the health professions relative to their numbers in the general population (Future of Medical Education in Canada, 2010). As outlined in Table 1, we have chosen to limit our review to students who are at the initial point of entry into a health professions program. We have excluded trainees who are in later stages of training (e.g. post-graduate medical trainees, nurse practitioner trainees, etc.) and practicing health professionals as they are chosen exclusively from the already narrowed initial pool; where the goal is to ultimately maximally broaden diversity in the professions.

The initiatives included must be targeted at recruitment and admissions of a diverse population of health professions trainees and some examples are listed under initiatives in Table 1. Our literature search may uncover other types of initiatives with the goal of increasing diversity. We have elected to include both quantitative and qualitative study types to ensure that we capture a broad range of initiatives and their outcomes. The same inclusion criteria will be used for both quantitative and qualitative studies.

Table 1: Inclusion and exclusion criteria

	<b>Inclusion Criteria</b>	<b>Exclusion Criteria</b>
<b>Target participants</b>	High School Students Students not already in a health professions program Potential health professions applicants	Students applying for Non-Health professions programs Practicing health professionals
<b>Target programs</b>	Medicine Nursing Physician assistant Pharmacy Dentistry Dietetics/Nutrition Physiotherapy Occupational therapy Dental hygiene Social work Speech and language pathology Clinical psychology Other health professions	Non-Health professions programs
<b>Initiatives</b>	Awareness campaigns Career and health fairs Pipeline programs Prematriculation programs Targeted admissions quotas Facilitated admissions criteria Scholarships, bursaries & financial aid Mentoring and support programs Other relevant initiatives	Studies without a specific intervention aimed at increasing diversity Studies that do not provide enough information about the initiative to allow replication by another group Initiatives aimed at retaining students already in health professions programs

<b>Outcomes</b>	Application rates Admission population profiles Program completion rates Impacts on knowledge, attitudes and skills of the entire trainee population Maintenance in practice Diversity of practice population Leadership in diversity Under-represented population satisfaction Under-represented population outcomes Career Choice Practice location Other relevant outcomes	Studies without reported outcome data Studies reporting only learner reaction or satisfaction
<b>Study Type</b>	Studies which provide primary data for any of the outcomes listed above, including (but not limited to) the following designs: Randomized controlled trials Non-randomized control trials Before and after studies Interrupted time series Qualitative or mixed method	Studies reporting on needs assessments for diversity Studies reporting the physician workforce or patient outcomes related to diversity without specific interventions Studies reporting quantitative post-test only results where change cannot be determined Opinion Papers, editorials or commentaries

**Scoping Search:**

In order to gauge the status of the available literature, we conducted an initial scoping search in OVID Medline only. We initially identified over 2100 titles, of which there is a range of approximately 15-100 relevant articles depending on whether we limited to those reporting outcomes or not. We identified a review by Loftin *et al.* (Loftin et al., 2013) who evaluated the impact of various interventions on the recruitment, retention and success of under-represented nursing students. We were unable to find a synthesis that described the impact of initiatives to improve diversity in a broader spectrum of health professions trainees. Several studies described initiatives including pipeline programs, adjusted admissions criteria, academic enrichment courses, post-baccalaureate programs,

designated seats, strategic planning and MCAT, DAT and GRE preparation courses. These papers describe outcomes that include admission test score changes, application and admission rates and overall pre-admission academic performance. Based on the results of this scoping search we refined the search strategy for the full search.

**Search Sources and Strategies:**

For the full systematic review, we aim to include any studies that provide primary descriptions or data for any of the initiatives listed in the above inclusion table.

**Search Strategy:**

A systematic search will be conducted by an expert searcher (SC) in the following databases:

- Medline (1946 – present)
- EMBASE
- PubMed
- CINAHL
- Cochrane Library
- Physical Education Abstracts
- ERIC
- SCOPUS
- PsycInfo
- Proquest Dissertations

Searches will be conducted using both controlled vocabulary (MeSH, Emtree, etc.) and text words representing the concepts described in Table 2. In order to feel confident that we did not miss key studies or initiatives and because this area does not use many standard MeSH headings, we chose to use a broad search. Although we have been as rigorous as possible, since the terminology is not standardized, we recognize that there is a risk that some studies may have been missed.

Table 2: Sample search for Ovid MEDLINE database

Health Professions Schools		Recruitment and Initiatives		Under-represented Groups		Excluded Concepts
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<p>Health Occupations/ or ((dental or dentistry or pharmac* or dietitian* or dietetic* or nutritionist* or sonograph* or radiation therap* or audiolog* or music therap* or respiratory therap* or physician* assistant* or phlebotom* or orthoptis* or Orthotis* or medical technol* or social worker* or massage therap* or podiatrist* or prosthetist* or chiropract* or kinesiolog* or medical or medicine or psycholog* or nursing or physical therap* or physiotherap* or occupational therap* or public health or speech therap*) adj2 (school* or program* or training or education)).mp.</p>	<p>AN D</p>	<p>admit* or encourage* or entrance* or pipeline program* or rural pipeline* or bursar* or scholarships or affirmative action*).mp. or (admission adj2 (quota* or facilitat* or assist* or support*)).mp. or (entrance* adj2 (quota* or facilitat* or assist* or support*)).mp. or exp "Fellowships and Scholarships"/or exp School Admission Criteria/</p>	<p>AN D</p>	<p>Sexuality/ or exp Ethnic Groups/ or bisexuality/ or exp homosexuality/ or exp Socioeconomic Factors/ or exp Cultural Diversity/ or exp disabled persons/ or transgendered persons/ or "transients and migrants"/ or women/ or jehovah's witnesses/ or african continental ancestry group/ or american native continental ancestry group/ or (Anabaptist* or Apostolic* or Bahai* or Buddhis* or Confucianism or Hindu* or Islam* or Jehovah's Witness* or Judiaism* or Latter-day Saint* or Mennonite* or Hutterite* or Mormon* or Muslim or Mysticism* or Pentacostal* or Shinto* or Sikh* or ((mature or disabled or transgendered or blind or deaf or amputat* or minorit* or diversity or wheelchair* or parapalegic* or immigrant* or ethnic*) adj3 student) or ((remote or rural) adj2 (student)) or poverty or impoverished or low social status or Metis or Indigenous* or Aboriginal* or Amerindian* or Autochtone* or First Nations or First Nation or tribal or Inuit* or aboriginie* or torres strait islander* or maori* or sami or underprivileged or underrepresented or disadvantaged or inner city or downtown core or city core or skid row slum or slums or barrio or barrios or shanty</p>	<p>NOT</p>	<p>and Residency"/ or medical resident* or patient recruitment.mp. or postgraduate or postdoctoral or tertiary education or exp Patient Selection/</p>
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In addition, we will hand screen the reference lists of all included studies and any relevant reviews. We will also conduct a separate search on SCOPUS looking forward for studies that cite any of the included articles. We will contact authors of relevant studies to determine if they know of any unpublished, recently published, or ongoing studies relevant to the review. Further we will review grey literature in the field of health education to identify any relevant studies (e.g. last two years of conference proceedings for major health professions education conferences, Google Scholar etc.).

**Study Selection Process:**

The titles and abstracts of the studies obtained following our search will be independently screened by two reviewers to exclude those that obviously do not meet the inclusion criteria or address the question under study.

The full text of all studies identified by either reviewer will be retrieved. A previously piloted study inclusion form derived from the BEME coding template will be applied to all of these studies by two independent reviewers to filter for relevant studies. The decisions made by the two reviewers will be compared and any disagreements that arise will be resolved through discussion, or with the aid of the third reviewer as required.

A copy of the intended inclusion form is appended.

**Data extraction and quality assessment:**

The resultant eligible papers will undergo data extraction using a previously piloted refined electronic BEME coding sheet for data extraction. The data extraction sheet will extract the following information:

- Author’s objective
- Structured intervention or initiative
- Comparator
- Primary and secondary outcomes
- Study design
- Characteristics of the study group

- Key features that led to success or failure of the initiative

A copy of the intended data extraction form is appended.

Quality assessment of studies will be evaluated using tools devised by The Cochrane Effective Practice and Organization of Care (EPOC) Group (<http://epoc.cochrane.org/sites/epoc.cochrane.org/files/uploads/14%20Suggested%20risk%20of%20bias%20criteria%20for%20EPOC%20reviews%20>), as well as the Critical Appraisal Skills Program Qualitative Checklist (<http://www.casp-uk.net/>) and mixed methods tools developed by Pace *et al.* (2012) and Pluye, Gagnon, Griffiths and Johnson-Lafleur (2009) to determine the risk of bias and strength of study findings.

The data extraction process will be discussed with both reviewers to establish a consistent approach and any questions that arise will be addressed at weekly meetings. All studies will undergo data extraction by one reviewer. To ensure accuracy and consistency of data extraction, a sample of 20% of the articles will be randomly selected for checking by a second reviewer. Quality assessment of all articles will be performed independently by two reviewers.

#### **Resolution of discrepancies:**

All data inclusion forms, 20% of data extraction forms and all quality assessments will be done by two independent reviewers. These will be compared at the end of each of the study selection, data extraction and quality assessment stages. Any discrepancies between the two reviewers will be resolved through discussion and if needed with the input of a third party. If there is extensive discrepancy in any of these stages, the inclusion, data extraction and quality assessment processes will be re-evaluated.

#### **Data Synthesis and Analysis:**

It is anticipated based on this review group's previous experience with systematic reviews in the medical education literature that the data obtained may be too heterogeneous to be combined for quantitative statistical meta-analysis. We will

approach our analysis in an iterative and responsive fashion as we continue through the data extraction process and evaluate relevant studies. If there are data of sufficient homogeneity to combine (e.g., similar initiatives, comparisons, outcomes, and study designs), we will follow standard methods for meta-analysis ([www.cochrane-handbook.org](http://www.cochrane-handbook.org)). If quantitative synthesis is not appropriate we will conduct a qualitative synthesis of the evidence, using procedures such as those outlined by Ogawa and Malen (Ogawa & Malen, 1991) for synthesizing multi-vocal bodies of literature. Several of the steps of this approach to literature reviewing overlap with traditional approaches, but there are alternative means of synthesis. Briefly, these approaches treat individual articles like cases in a case study, and they are interrogated using methods common to grounded theory. We will conduct a qualitative review of the evidence, grouping and reporting studies by outcomes and study design. Two study team members will review the results section of the data extraction forms line by line, and categorize the results into initial themes. These themes will then be verified through weekly meetings with co-investigators and ambiguities will be resolved through discussion. Categories will be reduced to major themes through ongoing discussion between study team members and the re-reading of the results section of the data extraction forms. We will develop evidence tables detailing study design and study population characteristics; initiatives and comparisons; key features; and, results and conclusions for the relevant outcomes. As there are a range of accepted outcomes as outlined in table 1, we will define success as grounded in each study. We do not feel it is appropriate to have preset criteria for effectiveness given the varied nature of the possible outcomes.

**Project timeline:**

Activity	Timeline
Scoping literature review and protocol development	March-June 2014
Protocol submitted to BEME for review	June 2014
Conduct electronic database and hand searches	June 2014 (2 weeks)
Completion of screening titles, abstracts and relevant full text articles	June 2014 (2 weeks)

Piloting of data extraction sheet	June 2014 (2 weeks)
Data extraction of studies completed	Mid-July 2015
Quality assessment completed	End of July 2015
Data analysis and synthesis	End of November 2015
Writing of manuscript complete	End of April 2016

**Conflict of interest:**

Nil.

**Funding:**

None other than Faculty of Medicine and Dentistry Summer Studentship in Health Professions Education sponsored by the Office of Education at the University of Alberta.

**Dissemination:**

We plan on publishing the completed review in Medical Teacher and presenting at national and international meetings. We intend to write a BEME Spotlight and with permission, we will disseminate it through the Canadian Association of Medical Education and submit it to the International Clinical Educators Network. Locally we will put the review in our institutional repository and present at our institutional Celebration of Teaching and Learning.

**Review team expertise:**

Anna E. Oswald, BMSc, MD, MMed, FRCPC: Dr. Oswald is an Associate Professor, consultant rheumatologist, and course-coordinator for the undergraduate musculoskeletal medicine course for preclinical medical students at the University of Alberta. She has a Masters in Medical Education degree from the University of Dundee. She is a Clinician Educator for the Royal College of Physicians and Surgeons of Canada. She has co-authored a systematic review on problem-based learning and has been the team lead for a BEME on musculoskeletal Clinical Skills, a BEME on Audience Response Systems, a

BEME on Team Based Learning and is in the process of completing a fourth BEME on promoting research among clinical educators. She is the team lead for this review.

Rabia A. Ahmed, MD, FRCPC: Dr. Ahmed is an Assistant Professor and consultant in infectious diseases at the University of Alberta. She works with underserved communities and is in the process of completing a BEME on promoting research among clinical educators.

Lisa Hartling, MSc, PhD: Dr. Hartling is Director of the Alberta Research Centre for Health Evidence and Director of the University of Alberta Evidence-based Practice Center. In this role she oversees approximately 20 staff in the production of systematic reviews, health technology assessments, and methodological research for evidence synthesis. She is a reviewer with The Cochrane Collaboration (Acute Respiratory Infections, Anesthesia, Injury, Wounds, Heart, and Infectious Diseases Groups). She has co-authored more than 30 systematic reviews. She has also co-authored a BEME on Musculoskeletal Clinical Skills, a BEME on Audience Response Systems, a BEME on Team Based Learning and is in the process of completing a fourth BEME on promoting research among clinical educators.

Kristen Simone, BSc(Hons): Ms. Simone is a second year medical student and recipient of a Summer Studentship in Health Professions Education grant at the University of Alberta.

Sandra Campbell, BA, MLS, AALIA (CP): Ms. Campbell is a Public Services Librarian at the University of Alberta John W. Scott Health Sciences Library and library liaison to the Faculty of Medicine and Dentistry. She is also an expert database searcher and information literacy instructor. She has recently co-authored and provided librarian support and consultation on recent BEMEs on musculoskeletal Clinical Skills, Audience Response Systems and Team Based Learning.

Jill Konkin, BA(Hons), MD, CCFP, FCFP, FRRMS: Dr. Konkin is an Associate Professor in the Department of Family Medicine and the Associate Dean, Community

Engagement. Her portfolio includes Indigenous, inner city, international and rural & regional health as well as community engaged research. She is responsible for implementing and supporting significant undergraduate medical education interventions, including a longitudinal integrated clerkship and the delivery of a 2<sup>nd</sup> year undergraduate course in communities in Northern Alberta. Her research is focused on longitudinal integrated clerkships, professional identity formation and social accountability. She is currently a co-PI for a systematic review of the literature on social accountability. Her clinical work is as a locum for comprehensive rural family physicians.

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