



The role of academic health centres in improving health equity: a systematic review

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1. Introduction

Academic health centres (AHCs) are organisations that pursue a ‘tripartite’ mission to provide high-quality care to patients, undertake clinical and laboratory research, and train the next generation of health professionals (French *et al.*, 2014). To deliver this mission, AHCs employ a wide variety of governance and operational models in combining higher education institutions delivering health professional education with one or more affiliated or owned teaching hospitals or health systems (Culbertson *et al.*, 1996, Weiner *et al.*, 2001, Wartman, 2007). Originating predominantly in Germany in the nineteenth century, the movement to link practice-based medical teaching in hospitals with university-based research and education – a precursor to modern AHCs – spread globally following the publication of the Flexner Report in 1910 (Ovseiko and Buchan, 2014). Today, AHCs are either established or developing in multiple countries and are well-established in North America, where they are the focus of a substantial body of research, commentary, books and policy reports.

In the United States (U.S.), AHCs are known as powerful ‘economic engines’ for their role in employing of thousands of people, and for their generation of economic growth through research and innovation (Wartman, 2015a). AHCs in Canada are similarly seen as critical components and drivers of a sustainable and innovative health system (National Task Force on the Future of Canada's Academic Health Sciences Centres, 2010), and as ‘organisations of the future’ that deliver state-of-the-art care by structuring interdisciplinary health care teams around the tripartite mission (King *et al.*, 2016). In the United Kingdom (U.K.) and Australia, AHCs are relatively new structures and are described using varying terminology. In the U.K., the establishment and national ‘designation’ of various AHC models is focussed on bridging research translation gaps through alignment of academic and clinical missions of universities and teaching hospitals (Ovseiko *et al.*, 2010). The establishment and designation of AHC models in Australia is similarly aimed at enhancing research translation with an emphasis on addressing current issues relating to health system fragmentation (Brooks, 2011, Jennings and Walsh, 2013).

There has been longstanding interest in the role of AHCs in addressing health system equity in the U.S., where AHCs have been known for their social contributions, such as caring for poor and underserved populations, for decades (The Commonwealth Fund Task Force on Academic Health Centers (U.S.), 2001, Foreman, 2004). In recent years, the U.S. health care reform ‘triple aim’ of improving the health of individuals and populations while controlling health care costs has encouraged a renewed focus within U.S. AHCs on their role in improving the health of populations, through equity-focussed activity in patient care, education and research (Gourevitch, 2014, Wartman, 2015b). Health equity, defined as the absence of avoidable and unfair inequalities in health (Welch *et al.*, 2016, Whitehead, 1992), is a core principle underpinning health care reform in the U.S., and

health equity concepts are also central to global commitments to achieve universal health coverage. In Australia, an expectation that AHC structures will adopt an equity focus was highlighted in a government initiative emphasising their role in ‘improving the health of vulnerable groups’ (Commonwealth of Australia, 2017).

Responding to the global spread of AHC models and a growing interest in their role in addressing health system equity, this systematic review examines the state of the evidence on the equity role of AHCs. The review questions are (1) How is health equity characterised or described in the literature on AHCs? (2) How is the concept of health equity operationalised by AHC activities? And (3) What are the drivers, barriers and facilitators of AHC activity relevant to health equity? The focus of the review is supported by the recent equity extension to the PRISMA guidelines which emphasises the global imperative to tackle health inequities, and the valuable role of equity-focussed systematic reviews in contributing to the global agenda to improve health equity (Welch *et al.*, 2016).

1.1 Definitions

AHCs are defined in this review as organisations that self-identify, or are identified by others, as academic health/medical (science) centres/systems/networks, integrated health research centres, advanced health research and translation centres, and/or other proxy terms. This definition draws on the mission-based concept of an ‘AHC’ as an organisation that aims to achieve high standards of clinical care, undertake clinical and laboratory research, and educate health professionals through various institutional models of health system-academic integration. Drawing on the Robert Wood Johnson Foundation definition of health equity (Braveman *et al.*, 2017), the review examines how AHCs are (or are not): eliminating unfair and unjust health disparities; and addressing the determinants of these health disparities.

2. Method

The review protocol was registered with the international prospective register of systematic reviews on 22 November 2016 (PROSPERO 2016:CRD42016051802). The protocol also underwent a peer review process and was published in May 2017 (Authors, 2017). The PRISMA guidelines and the equity extension were followed in the process of this review.

Apart from studies reporting clinical interventions or trials, all types of published peer-reviewed and grey literature in English, from any country, were eligible for inclusion in the review. Literature searching was limited to the time frame of 1 January 2000 to 31 December 2016, and publications not explicitly addressing the connection between AHCs and health equity concepts were excluded.

The Medline (Ovid), Scopus, Google Scholar, Cochrane Library, and Informit health suite databases were searched in January 2017 with search terms derived through the ‘pearl harvesting’ method

(Sandieson *et al.*, 2014). Additional articles were identified through snowballing, Google and website searches and direct contact with eight international authors and experts in the field.

Following removal of duplicates and initial screening, full text papers were sourced, assessed for eligibility and data extracted. Quality and relevance appraisal of selected publications involved an initial appraisal of the level of evidence using the Joanna Briggs Institute (JBI) Levels of Evidence (The Joanna Briggs Institute and the University of Adelaide, 2014), followed by assessment of methodological quality using the JBI critical appraisal tools aligned with study type (The Joanna Briggs Institute and The University of Adelaide, 2016). Data analysis followed a thematic synthesis approach (Thomas and Harden, 2008).

3. Results

3.1 Characteristics of the included publications

Bibliographic database searches were performed by the first author during January 2017, yielding 513 records (see Figure 1). Five additional articles were identified through website searching, 25 through the snowballing method, and three were recommended by experts in the field. Following the full text review of 155 articles, 103 were included in the final analysis.

[Insert Figure 1 here]

The study setting of included papers (see Table 1) was determined by the country of the AHC/s or AHC models being discussed. Out of the 103 papers included in the review, 85 (83%) examined AHCs in the U.S., and 17 (17%) examined AHCs in countries other than the U.S. One hundred papers (97%) reviewed were focussed solely on high income countries.

Papers were allocated a study type (see Table 2) using a modified version of the categories used in a scoping review by (French *et al.*, 2014). 82 papers (80%) were classified as expert opinion – these included commentary, perspective and opinion papers, as well as papers describing specific initiatives or programs that did not clearly use empirical methods.

[Insert Table 1 here]

[Insert Table 2 here]

71 publications were considered to be highly relevant to the review questions, with the remaining 32 considered relevant but to a lesser degree. The ‘meaningfulness’ and ‘effectiveness’ JBI scales of evidence used to categorise publications on a scale of 1 to 5 based on their study design, with ‘1’ representing the highest level of evidence, and ‘5’ representing the lowest level. This process resulted in 99 publications (96%) being allocated to the lowest two levels of evidence on the scales used. Only four studies (Weissman *et al.*, 2003, Malvey *et al.*, 2000, Davies, 2002, Block *et al.*, 2012) were assessed as being at level 3 or above. Of these, two (Malvey *et al.*, 2000, Davies, 2002) were assessed

as having low methodological quality using the relevant JBI critical appraisal checklist. No publications were excluded from the review based on this quality and relevance appraisal process.

3.2 How is health equity characterised, described and operationalised?

Analysis of included papers identified eight descriptive themes through which health equity concepts in relation to AHCs were characterised, described and operationalised.

Population health

Multiple commentaries and a book chapter described health equity concepts in relation to the ‘population health’ role of AHCs (Gourevitch, 2014, Wartman, 2015a, DiSesa and Kaiser, 2015, Berkowitz *et al.*, 2016, Washington *et al.*, 2013, Washington *et al.*, 2016, Perman *et al.*, 2015, Wartman, 2010, Aguilar-Gaxiola *et al.*, 2014, Newton and DuBard, 2006). Improving population health was highlighted as a key focus of health reform goals in the U.S., and a key element of a framework for rethinking the way AHCs deliver care in the country (Wartman, 2015a, Washington *et al.*, 2013). A focus on populations was contrasted with the traditional focus by AHCs on the health of individual patients (Washington *et al.*, 2016, Washington *et al.*, 2013), and a ‘fundamental disconnect’ was described between the success of AHCs in the U.S. as leaders in the provision of advanced care and specialist training, and in protecting the overall health of the populace (Wartman, 2015b). In the U.K. and Canada, AHCs were noted to have sought to emphasise population health through the creation of ‘Academic Health Science Networks’ (National Task Force on the Future of Canada's Academic Health Sciences Centres, 2010, Ovseiko *et al.*, 2014).

Several papers sought to encourage efforts by AHCs to re-focus their activities towards population health (Gourevitch, 2014, Foreman, 2004, Perman *et al.*, 2015, Roper and Newton, 2006). Specifically, a number of commentaries perceived an overemphasis within AHCs on biomedical research to the detriment of population-focussed research, and suggested research foci to better inform public policy (Roper and Newton, 2006, Fischer and McDermott, 2013, Gourevitch, 2014, Zerzan *et al.*, 2011, MacLellan, 2002, Ellner *et al.*, 2015, Bonham *et al.*, 2010). Referring to the education mission of AHCs, a number commentaries suggested that AHCs recalibrate their educational programs to effect better alignment between health professional curricula and population health needs, and encourage the development of inter-professional teams rather than focus on revenue-generating speciality training (Acosta and Aguilar-Gaxiola, 2014, Wartman, 2010, Gourevitch, 2014, Newton and DuBard, 2006, Perman *et al.*, 2015, Wartman, 2015a, Hall and Grumbach, 2010, Wartman and Steinberg, 2011).

Addressing health disparities

Multiple commentaries and two book chapters, all U.S.-focussed, described AHCs as having a particular capacity to lead health system initiatives aimed at addressing health disparities (Foreman,

2004, Dzau *et al.*, 2010, Denham *et al.*, 2013, Roper and Newton, 2006, Shomaker, 2010, Dzau *et al.*, 2014, Clancy, 2012, Blumenthal *et al.*, 2004, Acosta and Aguilar-Gaxiola, 2014, Zuckerman, 2014, Perman *et al.*, 2015). Reasons for this assertion included a perceived capacity of AHCs to interact with all points along a research translation continuum, their multi-professional and multi-disciplinary composition and their position as 'centres of convergence' for health care, research and workforce training. Reflecting on the proximity of AHCs in the U.S. to populations with high and complex health needs, their public funding and a perception that AHCs have the capacity and resources to make a difference, one commentary argued that improving the health of underserved populations could not conceivably fall to any other organisation (Foreman, 2004), although many patients were seen to be 'living in the shadow' of AHCs in the U.S. (Lewin *et al.*, 2014). A number of recommendations were made in these papers for the adoption of strategies by AHCs to strengthen their equity focus across all three mission areas (service delivery, research, and education). Multiple examples were also identified within the literature of initiatives that aim to operationalise health equity objectives (Berkowitz *et al.*, 2016, Denham *et al.*, 2013, Szilagyi *et al.*, 2014, Silberberg *et al.*, 2007, Landrigan *et al.*, 2011, Yaggy *et al.*, 2006, Aguilar-Gaxiola *et al.*, 2014, Shomaker, 2010, Michener *et al.*, 2005, McElfish *et al.*, 2015, Armstrong *et al.*, 2016, Wakeman and Rich, 2010, Juniarti *et al.*, 2015, O'Brien and Kaluzny, 2014, Kelley, 2009, Coleman, 2006, Berger, 2009), two of which were described empirically (Block *et al.*, 2012, Malvey *et al.*, 2000).

AHCs were seen to have a moral and social obligation, and a responsibility, to ensure that all people living within the communities they serve, and particularly underserved populations, have access to affordable health care (Acosta and Aguilar-Gaxiola, 2014, Foreman, 2004, Perman *et al.*, 2015). Two commentaries and a policy report discussed the need for universal health coverage in the U.S. and the role of AHCs in facilitating this (Pardes, 2000, Fischer and McDermott, 2013, Committee on the Roles of Academic Health Centers in the 21st Century (U.S.), 2004). Health systems objectives emphasising universal, affordable and equitable health care access in China and Tanzania were also outlined, with the establishment of AHC-style models of academic-health services integration described as central to the achievement of these objectives (Chen, 2013, Macfarlane and Kaaya, 2012). Multiple papers reflected on the historical provision by AHCs in the U.S. of high-quality care to millions of uninsured Americans and the implications of broader health care reform on uninsured and under-insured patients, including two empirical studies (Bisgaier *et al.*, 2012, Weissman *et al.*, 2003) and two U.S. policy papers (The Commonwealth Fund Task Force on Academic Health Centers (U.S.), 2003, The Commonwealth Fund Task Force on Academic Health Centers (U.S.), 2001).

Social determinants of health

Several papers considered the role of AHCs in addressing the social determinants of health (SDH) (Washington *et al.*, 2016, Perman *et al.*, 2015, Association of Academic Health Centers, 2015, Wartman, 2010, Wartman and Steinberg, 2011, Betancourt and Maina, 2004), defined in one policy

paper as the factors (including social circumstances, environment, behavioural choices, and access to medical care) that determine, or strongly influence, the ability to achieve and maintain good health throughout one's life (Association of Academic Health Centers, 2015). Commitment to addressing the SDH was emphasised as a key feature of the role of AHCs in population health improvement (Washington *et al.*, 2016, Wartman *et al.*, 2015).

Several commentaries referred to the need for a 'business case' to be made for AHCs to address these determinants, highlighting the potential investment value of building expertise and infrastructure in this area before it becomes 'competitively essential' in the near future (Goldman, 2014, Wartman *et al.*, 2015, Knettel A, 2011). Some challenges and barriers to AHCs addressing the SDH were also described, including siloed and fragmented responsibilities, inadequate population health data, insufficient workforce development and logistical and cultural challenges (Association of Academic Health Centers, 2015, Wartman *et al.*, 2015). Recognising the significance of the SDH in determining health outcomes, one commentary contended that the SDH may be under-appreciated both within AHCs and at the national policy level in the U.S. (Wartman *et al.*, 2015). Nonetheless, one commentary referred to the existence of multiple programs within AHCs in the U.S. designed to influence the social determinants of health (Wartman and Steinberg, 2011).

Community engagement

'Community engagement' was defined in one paper using the U.S. Centres for Disease Control definition as the 'process of working collaboratively with and through groups of people affiliated by geographic proximity, special interest, or similar situations to address issues affecting the well-being of those people' (Szilagyi *et al.*, 2014). Three commentaries described the need for AHCs to strengthen links with communities in order to improve health outcomes within their localities (MacLellan, 2002, Levine, 2008, Boutin-Foster *et al.*, 2008). These papers argued that partnerships between AHCs and community organisations can develop and strengthen community capacity, address disparities in health care and support the missions of the AHC. Two commentaries argued that adoption of a community-engaged research (CEnR) agenda within AHCs, involving engagement of communities in all aspects of research activity, is necessary if health disparities are to be addressed (Michener *et al.*, 2012, McElfish *et al.*, 2015), and one commentary described an initiative to encourage U.S. AHCs to engage in CEnR targeted to population health needs (Eder *et al.*, 2013).

Although community engagement was described in as a relatively new activity within many U.S. AHCs (Szilagyi *et al.*, 2014), a number of examples of 'successful' community-AHC collaborations in the U.S. were profiled, some of which involve partnerships between AHCs in the U.S. and community health centers (CHCs) (Denham *et al.*, 2013, Acosta and Aguilar-Gaxiola, 2014). However, community mistrust of AHCs and a sense that AHCs operate outside of the communities in which they are located were described in two commentaries as factors limiting effective AHC-

community partnerships aimed at improving population health (Wartman and Steinberg, 2011, Michener *et al.*, 2005).

Global health

Multiple papers addressed the current and potential role of AHCs in ‘global health’ (Wartman, 2010, Ackerly *et al.*, 2011, Kolars, 2000, Dzau *et al.*, 2010, Hotez, 2004, Landrigan *et al.*, 2011), defined in one paper as ‘a field of study, practice, and research that transcends borders, engages in multidisciplinary activity, and includes both population-based and clinical foci’ (Landrigan *et al.*, 2011). Two commentaries described the scale and complexity of global health challenges and discussed the role of AHCs in addressing them (Dzau *et al.*, 2010, Ackerly *et al.*, 2011). One argued that AHCs should ‘create not only novel drugs, devices and other technologies, but also new ways of deploying inexpensive preventive and treatment strategies among populations’ in order to contribute to addressing these global challenges (Dzau *et al.*, 2010). The ‘responsibility’ of AHCs to address population health at not only local and national levels, but also global levels, was emphasised, and this approach was contrasted with the dominant operating model of AHCs in the U.S. where care is provided ‘only to those patients who come through their doors’ (Ackerly *et al.*, 2011).

A number of examples of global health initiatives driven by AHCs in the U.S. were profiled (Aretz and Mudge, 2011, Adli *et al.*, 2011, Quinn, 2008, Williams *et al.*, 2008, Koplan and Baggett, 2008, Kasper and Bajunirwe, 2012), and global health activity of AHCs in the U.S. were described as involving collaborations with partners in China, Singapore, India, and the Middle East in clinical and translational research, global health, health care management, and medical and health professional education (Dzau *et al.*, 2015). One commentary proposed a set of approaches to improve globally-focussed initiatives to ensure that U.S. AHCs deliver value to collaborating nations (Kolars, 2000).

Health system reform

Multiple commentaries described the financial unsustainability of the U.S. health system, highlighting rising costs, increasingly unaffordable insurance coverage, and challenges in the delivery of quality, equitable and accountable health care, and the implication of this on AHCs (Prislin *et al.*, 2010, MacLellan, 2002, Thompson and Anason, 2012, Taylor, 2016). Multiple papers discussed U.S. healthcare reform and had a specific focus on components of the Patient Protection and Affordable Care Act (PPACA, or ‘Obamacare’) (Aguilar-Gaxiola *et al.*, 2014, Wartman *et al.*, 2015, Thompson and Anason, 2012, Taylor and Clinchy, 2012, Felton, 2011). Health equity was described as the primary goal of the PPACA, which is designed to ‘ensure that all Americans have access to quality, affordable health care’ (Acosta and Aguilar-Gaxiola, 2014).

AHCs were described simultaneously, and paradoxically, as having contributed to the problems driving healthcare reform in the U.S. (Washington *et al.*, 2013), as needing to respond and adapt to the reform (Washington *et al.*, 2013, Pricewaterhouse Coopers, 2012, Committee on the Roles of

Academic Health Centers in the 21st Century (U.S.), 2004, Wartman *et al.*, 2015), and as being well-positioned to take a leadership role in the reform (Goldman, 2014, Prislin *et al.*, 2010, MacLellan, 2002, Taylor, 2016, Rothman *et al.*, 2015). Health care reform in the U.S. was seen to have spurred interest of senior leaders within AHCs in population health, translational and community-based research, and team-based education, training and practice (Wartman *et al.*, 2015, Goldman, 2014). More directly, it was noted that certain PPACA provisions and regulations require that AHCs demonstrate community benefit (Szilagyi *et al.*, 2014). The importance of good leadership in navigating AHCs through this context was also highlighted (Shomaker, 2010, Committee on the Roles of Academic Health Centers in the 21st Century (U.S.), 2004, Clancy, 2015, Michener *et al.*, 2012, Kirch and Ast, 2017, Wartman, 2010, Gourevitch, 2014, Thompson and Anason, 2012, Wartman, 2015a).

Value-based and accountable financing models

Health equity concepts were also described in relation to the shift observed in the U.S. health care system from volume-based payment structures to value-based structures (Lee, 2016, Wartman, 2015b, Pines *et al.*, 2014, Dzau *et al.*, 2013, Thompson and Anason, 2012, Dinan *et al.*, 2010). The shift was described as moving from a focus on caring for sickness, to one concerned with wellness and patient-centred, coordinated models of care (Thompson and Anason, 2012, Dinan *et al.*, 2010). Whereas accountability for quality and safety of healthcare ‘has historically resided at the individual physician level’ in the U.S. (Mathews *et al.*, 2016), the health reform context was seen to be shaping new health system reimbursement models that emphasise accountability of AHCs to their funders, communities and patients (Gourevitch, 2014). Multiple papers examined the creation of Accountable Care Organisations (ACOs) through the PPACA, as one example of a value-based financing model being established in the U.S. (Stein *et al.*, 2015, DiSesa and Kaiser, 2015, Berkowitz *et al.*, 2016, Shomaker, 2010, Karpf and Lofgren, 2012, Antos, 2015, Denham *et al.*, 2013, Hall and Grumbach, 2010, Wartman, 2015a).

Multiple papers discussed the implications of the volume-to-value shift on the business model of AHCs, within which the traditional fee-for-service model has been to reward volume over value, and has included a reliance on complex tertiary care procedures to generate income (Karpf *et al.*, 2009, Pricewaterhouse Coopers, 2012, Mathews *et al.*, 2016, Gourevitch, 2014, Stein *et al.*, 2015, Wartman and Steinberg, 2011, Berkowitz *et al.*, 2016, Prislin *et al.*, 2010, Lofgren *et al.*, 2006). The incongruity of this traditional business model with equity-focussed population health goals was highlighted in these papers. Incentives within AHCs to deliver a return on investment, including a driving focus on maximising profit, were described in two commentaries as running counter to their ability to put patients’ needs at the centre of their activity or to build primary care capacity (Prislin *et al.*, 2010, Hall and Grumbach, 2010).

Role clarification/recalibration

Many papers sought to reconceptualise the traditional or current role, missions and value proposition of AHCs, emphasising their responsibility to improve *health*, rather than *health care* (Roper and Newton, 2006, McElfish *et al.*, 2015, Ramsey and Miller, 2009, Borden *et al.*, 2015, Wartman, 2010). Several papers contended that the ‘multiple missions’ of AHCs have tended to become ends in themselves, potentially obscuring what should be one overarching goal, described variously as ‘improving value for patients’ (Lee, 2016), ‘improving the health of the public’ (Ramsey and Miller, 2009), ‘improved health and wellbeing’ (Wartman, 2010), ‘serving the health of the nation’ (Borden *et al.*, 2015), and ‘meeting the needs of patients and society’ (Newton and DuBard, 2006). Several papers queried the role of AHCs within a changed global marketplace and sought to understand the reasons why they should exist at all, at least in the form that they have existed in the past (Lee, 2016, Novick, 2004, Borden *et al.*, 2015, Ward, 2002, Shugart, 2002).

Three commentaries and one policy paper focussed on the Australian context advocated for the development of unique, and potentially virtual, AHC models that extend beyond capital city-based centres and that have a focus on primary care (Jennings and Walsh, 2013, McKeon *et al.*, 2013, Fisk *et al.*, 2011, Brooks, 2011). In the Canadian context, one commentary argued that AHCs have a role to play in sustaining and enhancing Canada’s ‘fragile rural health system’, including by promoting health professional ‘generalism’ within both rural and urban areas (MacLellan, 2002). A number of commentaries referred to the historical mission of the field of academic medicine as being the pursuit of health for all, and the pursuit of health in the service of society (Clancy, 2012, Wakeman and Rich, 2010, Betancourt, 2006, Ramsey and Miller, 2009, Ovseiko *et al.*, 2010, Garson, 2006). One commentary, critical of the overriding focus within AHCs on their tripartite mission, contended that the field of academic medicine has ‘lost sight’ of this original, social mission (Ramsey and Miller, 2009).

4. Discussion

A prior scoping review of AHCs using systematic methods (French *et al.*, 2014) explored the managerial, political, and cultural perspectives of AHCs and, as in the present review, found the literature on AHCs to be largely normative, atheoretical and predominantly focussed on North America. This review extends and complements the scoping review by systematically synthesising and critically appraising the literature on the role of AHCs in improving health equity. Analysis of the literature on AHCs using this health equity lens, which involved examining how AHCs are (or are not) eliminating unfair and unjust health disparities and addressing the determinants of these health disparities, has contributed a number of unique findings.

The concept of health equity in relation to the role of AHCs was expressed most obviously within the themes of ‘addressing health disparities’ and ‘the social determinants of health’: these themes are

central to the definition of health equity used in this review. The review also found that health equity concepts were discussed, though less explicitly, in relation to population health, community engagement, global health, health system reform, value-based financing models including those that emphasise accountability of AHCs to the public and other stakeholders, and finally in relation to a more introspective theme about AHCs' overarching purpose and function, expressed within multiple papers as confusion or uncertainty about the role and missions of AHCs. As a common focus within these themes was on approaches to better targeting health resources and to aligning health system structures to meet actual health needs of groups of people, the literature in these themes touched upon various aspects of Braveman *et al.*'s 'key steps to advancing health equity' by: identifying particular health care needs and disparities, proposing or reflecting on initiatives aimed at addressing them, and proposing or reflecting on ways to monitor and evaluate equity-focussed outcomes (Braveman *et al.*, 2017). However, none of the included papers addressed the various aspects of health equity and its advancement systematically.

Nonetheless, the review found overwhelming evidence of an interest in, and aspiration to improve, the health equity focus of AHCs. A broad consensus was identified that AHCs both 'could' and 'should': lead health equity-focussed initiatives aimed at tackling health disparities and their determinants; and better address the health needs of particular communities and populations. Further, AHCs were seen to have a moral 'obligation' and 'responsibility' to improve health equity through meeting community, public, and population health needs in what was considered to be the traditional spirit of academic medicine. The perceived capacity of AHCs to contribute to health equity was seen to arise from the unusual or unique characteristic of AHCs to blend health care, research and health professional education within the one institutional framework. The role of the broader health system and policy context of AHCs in driving, facilitating and inhibiting their health equity role, focus and capacity was also recognised.

The interest in the health equity role of AHCs, however, coincided with a substantial degree of uncertainty about the overarching role and relevance of AHCs, and particular confusion about their 'many missions'. The role confusion revealed a degree of questioning about whether AHCs exist to serve: their own measures of excellence, their patients, the communities in which they are located, their nations, the world, or a combination of these. The scoping review on AHCs also identified the 'many missions' of AHCs as a key challenge for AHCs (French *et al.*, 2014). This perceived lack of clarity about the overarching role of AHCs may have particular relevance for any health equity-focussed objectives. Achieving clarity in aspirations and direction is understood to be particularly important in the case of health equity which can often be subject to different interpretations, with implications for prioritisation and resourcing (Braveman *et al.*, 2017).

Progress towards any articulated health equity goals requires evaluation and monitoring, involving measuring not only overall and average levels of health but also disparities between sub-groups within a population (Braveman *et al.*, 2017). Equity-focussed monitoring was discussed in some papers in relation to a perceived need to develop population-focussed metrics in AHCs (Goldman, 2014, Lee, 2016), and one paper in particular described a project to initiate a unified approach for monitoring progress in improving population health outcomes within U.S. AHCs involving equity-focussed metrics (Aguilar-Gaxiola *et al.*, 2014). However, we found almost no evidence of measured outcomes against equity metrics, with only two empirical studies included in the review providing some evidence of gaps in the extent to which AHCs are delivering on equity-focussed goals; these were narrowly focussed on U.S. AHCs' perceived safety net role for uninsured patients (Bisgaier *et al.*, 2012, Weissman *et al.*, 2003). Work to implement equity-focused metrics within AHCs may be timely in light of the view expressed in multiple included papers of a misalignment between the perceived equity capacity of AHCs and their actual demonstrated delivery or implementation of equity-focussed goals and initiatives. Populations seen to be 'missing out', or at risk of missing out, on the benefits of AHCs included people who don't present as patients to AHC facilities, vulnerable persons, uninsured persons, minority populations, and rural and remote populations.

A key finding of this review was a near-total lack of empirical evidence to support the perceptions that AHCs have an equity role and capacity, and are delivering (or not) on this role. Only five papers reported the results of empirical research (Bisgaier *et al.*, 2012, Malvey *et al.*, 2000, Block *et al.*, 2012, Weissman *et al.*, 2003, Davies, 2002), and four of these, all focussed on the U.S. context, did not extend beyond an examination of a particular type of equity focus (their safety net role) nor beyond single equity-focussed interventions at single AHCs. The fifth (Davies, 2002) acknowledged a historical 'social mission' of AHCs and equity as a focus of the U.K. health system, but did not draw on empirical methods to explore this focus. Further, of these five studies, only four were assessed as being above the bottom two levels of evidence in the quality and relevance appraisal phase, and only one was published within the recent decade. This review therefore illuminates a virtually non-existent contemporary empirical basis to the assertions made in the literature about the health equity role of AHCs.

4.1 Strengths and limitations

To the best of the authors' knowledge, this review is the first attempt to systematically synthesise and critically appraise the literature on the phenomenon of AHCs using a health equity lens. Other strengths of this review include the use of PRISMA guidelines and the equity extension, and JBI Levels of Evidence and critical appraisal tools.

This review has several limitations. The search of the literature was restricted to published documentation in the English language, and as such the review may have omitted unpublished

documentation of possible relevance to the review questions and non-English studies. Also, while various forms of relationships exist between health service organisations and organisations delivering health and medical education and research in many countries, these relationships are not always described in institutional terms (Davies, 2002). A potential additional limitation of the review is therefore that the search keywords may have led to the omission of activity of organisations that may fulfil an objective definition of an AHC but that do not use this nomenclature. To go some way towards addressing this, the review used a range of keywords and Medical Subject Headings in database searches, broadening the field of included papers beyond institutions described as AHCs. However, the protocol-driven search strategy adopted in this review, wherein the search parameters were largely defined at the outset of the study, may still have led to the omission of some studies despite the broad search parameters (Greenhalgh and Peacock, 2005).

As the purpose of this review is interpretive explanation and not prediction, the inclusion of additional papers may not have added to the range of concepts that were derived from those that were included (Thomas and Harden, 2008). Nonetheless, to address some of the limitations described above, future globally-focussed reviews of the literature on AHCs should seek to achieve greater representation of contexts outside of the U.S. by adopting a purposive selection process, which should involve a greater emphasis on informal selection approaches such as browsing library shelves and approaching a larger number of experts in a wide selection of countries (Greenhalgh and Peacock, 2005). Finally, the results of the review are also limited by the study designs of included papers, which are mostly expert opinion.

4.2 Future research

Future research should firstly seek to understand how the blend of health care, research and workforce education within AHCs positions these organisations to lead or contribute to initiatives aimed at tackling unfair and unjust health disparities and their determinants. Second, future research should improve the quality of the evidence base on the contributions of AHCs to health equity goals by empirically examining health equity strategies and interventions of AHCs across multiple countries and contexts. Such research might involve examining the vision and mission statements of AHCs, and the processes underpinning how they were derived and are being operationalised. The research might also seek to identify and evaluate specific health equity initiatives adopted within AHCs to strengthen the evidence for their efficacy and to identify areas for improvement. This research should take account of the different AHC variants and seek to examine whether particular models or approaches are better suited to adopting or developing an equity focus. Adoption of a 'social accountability' framework in analysis of AHC goals and initiatives, which emphasises the extent and capacity of citizens to hold the state and service providers accountable and make them responsive to their needs (The World Bank, 2013), such as adopted within medical education (Murray *et al.*, 2012), might help to focus attention within this future research on health equity concepts. Finally, as the review also

highlights the importance of the broader health system and policy context of AHCs in driving, facilitating and inhibiting the health equity focus and capacity of AHCs, future research should consider this context, and a specific research undertaking in this area might seek to analyse the current or potential contribution of AHCs to the capacity of broader health systems to meet equity objectives.

5. Conclusion

This review has systematically reviewed the literature on the role of AHCs in improving health equity. The review has found substantial interest in the capacity and potential of AHCs to adopt a health equity role, highlighting the relevance of health equity concepts in discussions about the role and missions of AHCs, particularly in the context of the growing global focus on health equity as a key measure of health system performance, and the global spread of AHC models. However, the review also found a profound lack of evidence, robust or otherwise, to support this perceived capacity, and of demonstrated contributions of AHCs to health equity goals – indicating an urgent need for further research. Such research should improve the quality of the evidence base on the capacity of AHCs to contribute to health equity goals, and on the efficacy of any equity-focussed strategies and interventions within AHCs. This research should consider the health systems and policy contexts in which the AHCs are embedded and could adopt a social accountability framework.

Policy makers involved in establishing, resourcing and evaluating AHC models in multiple countries might apply the findings of this review by clarifying the alignment of AHC goals with those of the overall health system in which AHCs are embedded and are being developed. In parallel, AHC leaders might seek to understand the equity focus of their own organisations, including whether health equity is or should be a goal, how equity concepts are reflected within their organisations’ vision and mission statements, and whether any equity-focussed activities are generating results.

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Figure 1. Flow of information through the systematic review

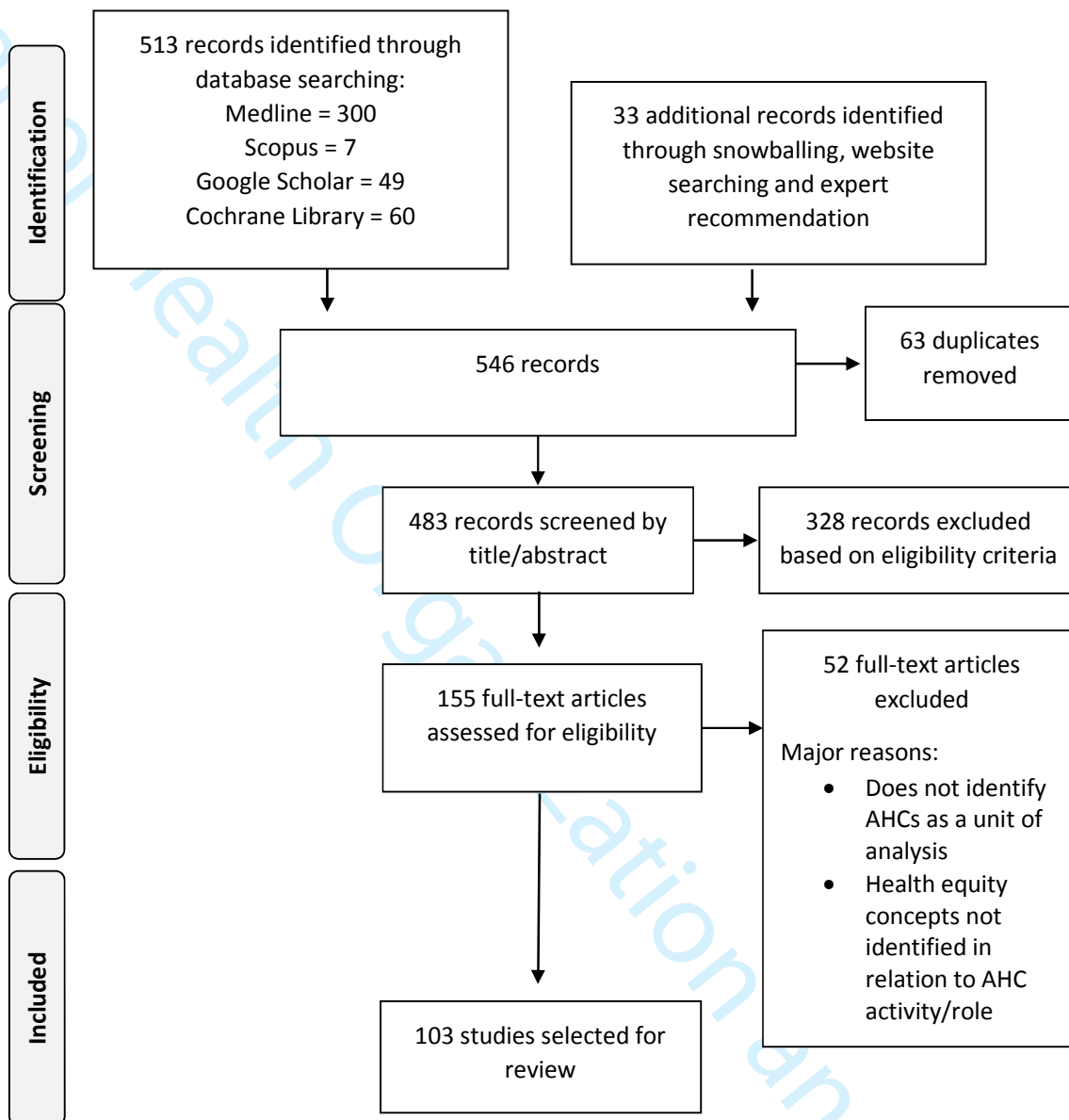


Table 1. Breakdown of publications reviewed by study setting (n=103)

Country of study	Number of publications
United States	85 (83%)
Australia	5 (5%)
Canada	4 (4%)
United Kingdom	4 (4%)
China	1 (1%)
Singapore/United States	1 (1%)
Tanzania	1 (1%)
Uganda/United States	1 (1%)
Global	1 (1%)
High income country	100 (97%)
Low-middle income country	3 (3%)

Table 2. Types of publications reviewed (n=103)

Type of publication	Number of publications
Expert opinion	82 (80%)
Policy report	6 (6%)
Empirical research	5 (5%)
Conceptual framework analysis	4 (4%)
Book	3 (3%)
Review	1 (1%)
Other	2 (2%)