

BMJ Open Academic health science centre models across the developing countries and lessons for implementation in Indonesia: a scoping review

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ABSTRACT

Objective To describe models of academic health science centres (AHSCs) across developing countries, in order to inform AHSC development in Indonesia.

Design Scoping review with systematic methods.

Data sources Ovid MEDLINE, ProQuest Central, Wiley online library, Scopus and Web of Sciences were searched for relevant publications from 1 January 2015 to 1 December 2020. 'Grey literature' was hand searched by targeted website searches, Google searches, as well as personal communication held with stakeholders in Indonesia specifically. Relevant articles regarding AHSCs in developing countries are included. The review would be synthesised to focus on the purpose, structure and core activities of AHSCs. Strategies for success were also considered.

Results Twenty-six recognised AHSCs in developing countries were identified, located in Asia (n=13), Europe (n=1), South America (n=7) and Africa (n=5). Innovation, health system improvement and enhancement in academic capacity were the common visions. Most centres are functionally integrated and university-led. Most AHSCs include community health services to complement primary stakeholders such as academic institutions and hospitals. Limited information was identified regarding patient and public involvement and workforce capacity building. Five AHSCs have been piloted in Indonesia since 2018, integrating universities, academic hospitals and provincial health offices. However, information regarding their core activities and successes is limited.

Conclusions The review suggests that limited published data are available on AHSC models in developing countries, but they still provide important insight into AHSC development in Indonesia. Innovation and health systems strengthening are the common visions. Functional integration with university leadership is the most common model of governance. Other than universities and hospitals, community health centres, research centres and regional health offices are common partners. There is a little description of community engagement and workforce capacity building.

INTRODUCTION

In 2014, Indonesia adopted a universal health-care system that seeks to provide government-subsidised care to its entire population.

STRENGTH AND LIMITATION OF THIS STUDY

- ⇒ This review collects data on AHSC in developing countries from various sources such as databases and 'grey literature'.
- ⇒ The database search could not find any relevant articles. Hence, all highlighted articles in this review were originated from the 'grey literature'.
- ⇒ Data quality is varied among gathered sources.
- ⇒ Gathered data are limited to models described in literature as 'academic health science centre', 'academic health centre' or 'academic health system'.
- ⇒ The data are prone to changes due to any reforms within the organisation.

However, delivering effective and efficient healthcare to 270 million people living across more than 16 000 islands in the archipelago will require substantial ongoing work. The developing country is still struggling with achieving indicators of sustainable development goals (SDGs). For example, a 2.4% annual reduction in maternal mortality is far behind the 9.5% needed to reach the target of 70 deaths per 100 000 live births in 2030.¹ The infant and under-five mortality rates are, respectively, 12 per 1000 live births and 25 per 1000 live births, both behind the 2015 targets.¹ Furthermore, there are 27.4 skilled health professionals per 10 000 population in Indonesia, below the 34.5 global standard^{2,3} and the growth of primary health centres and hospitals is limited and unequal.^{4,5} Lastly, the healthcare system is complex, with multiple stakeholders and levels of government, which creates inefficiency and uncertainties in the roles and functions of the groups involved.⁶

To help address the above challenges, the Indonesian government is promoting integrated stakeholder partnerships in health, which include the development of academic health science centres (AHSCs)⁷ to harmonise health services, research and education in the current multistakeholder environment.

The proposed AHSC concept aims to ensure analogous objectives and directions of all partners, with the broad goals being the improvement in health, research and education, as well as cross-institutional accountability.^{6,8}

More than 100 partnerships in the USA were recognised as AHSCs in the 1980s^{9,10} long after the 1910 Flexner report that recommended integrating academic and clinical services.¹¹ Naming variations include ‘academic health centre’ and ‘academic health science network’. The concept varies in its delivery, but the common feature is a strong link between academia and the health sector.¹² Thus far, AHSCs have been implemented widely across developed countries, notably the UK, Canada, Singapore and Australia.^{13–15} Their adoption in developing countries is less well understood, with limited evaluation or peer-reviewed publications.

The AHSC definition in Indonesia was first documented in the 2015 presidential regulation regarding academic hospital.¹⁶ It briefly mentioned the expectations for academic hospitals to develop structured collaboration to improve their health services, education and research quality.¹⁶ As the follow-up, AHSCs were independently developed in several regions to obtain benefits from a synchronised hospital–university academic activity.¹⁷ In 2018, the Ministry of Research, Technology and Higher Education (MoRTHE) urged AHSCs to contribute more to the regional health system by engaging with the provincial health office.⁸ It altered the purpose of AHSC to expand beyond academic medicine by focusing more on the fulfilment of the national community health indicators.⁸ With the assistance of the Ministry of Health (MoH), the MoRTHE developed a 5-year roadmap⁸ and mandated five pilot AHSCs, each led by a university, to develop working models of the adjusted AHSCs.¹⁸ AHSC partnerships may include provincial health offices, non-ministerial government agencies, industry, the private sector and non-government organisations.⁸ A Joint Committee consisting of representatives from the MoRTHE and MoH was established to support the mission¹⁹ and operates under ministerial regulation.¹⁸ Despite the national government involvement, all five AHSC pilots were operated without any specific funding provided by both national and local governments. The achievements were also under-reported due to insufficient monitoring and evaluation programmes.

The present study aimed to undertake a systematic review of peer-reviewed literature and a grey literature review to capture and describe models of AHSC across developing countries, in order to inform further AHSC development in Indonesia.

METHODS

For the purposes of the present review, developing countries were defined according to the United Nation’s economic situation and prospects classification²⁰ as well as classifications adopted by the Australian government.²¹

A scoping review with systematic methods was undertaken on 1 December 2020 of journal databases and the ‘grey literature’ (published material outside of journal databases). Search completion and data extraction were performed by author HB.

In the initial database search, Ovid MEDLINE, ProQuest Central, Wiley online library, Scopus and Web of Sciences were interrogated using the following terms: (‘academic health cent*’ OR ‘academic health system’ OR ‘academic health science cent*’) AND (model* OR governance* OR design). Gathered articles were then categorised by ‘development’ status, that is, developing or developed. All articles in developing countries were included, while other articles were considered for references. Health sector–academic collaborations are not new, but the specific model of AHSCs is still novel in developing countries, and hence selected articles needed to describe initiatives that met the definition of AHSCs¹² (including the model and the governance structure), as well as be published from 1 January 2015 to 1 December 2020. Secondary hand searching of references was also undertaken.

The ‘grey literature’ search started with the webpage of the Association of Academic Health Centre International (AAHCI).²² From here, the webpage of individual association members based in developing countries was searched. A Google search was also undertaken using the terms: ‘academic health centre (center)’, ‘academic health system’, ‘academic health science centre (center)’ and ‘academic health science network’. Once again, initiatives needed to meet the definition of AHSCs¹² and the model and governance structure had to be described. Official publications, reports, policy briefs or guidelines (published materials outside the journal databases) were gathered. Non-English documents were translated by author HB or the Google Translate engine.

The database searching process was presented using Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA 2020 flow chart.²³ No protocol was published beforehand.

Information on the AHSC initiative in Indonesia was sourced via personal communication with ministerial officers, members of the Joint Committee, academics and hospital leaders, in addition to official websites regarding the national health system,⁷ the Joint Committee¹⁸ and the five pilot sites.^{24–28}

Informed by prior AHSC priority setting and previous literature on AHSC evaluations to inform development in Australia,²⁹ key themes were considered in four categories: (1) vision, purpose and statement, (2) structure and governance, (3) community engagement and (4) workforce capacity building. Details for the structure and governance were adapted from the dimensions of medical school–clinical enterprise relationships,^{30,31} with an additional ‘orientation’ subcategory and modifications to the used terminologies: ‘structural integration’ to define a joint leadership, ‘functional integration’ to define ‘joint partnership board’, ‘university-led’ to define the dean/

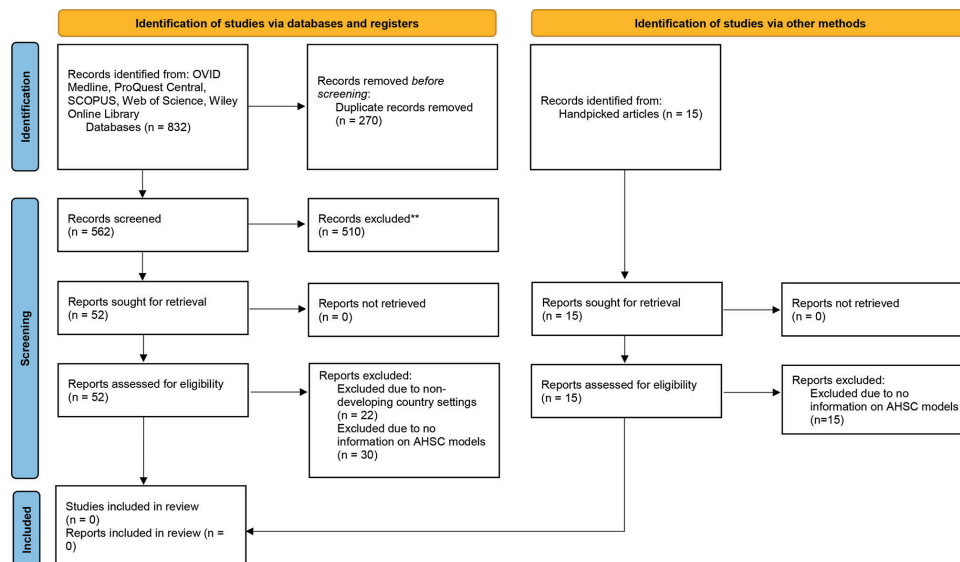


Figure 1 PRISMA flow diagram on literature searching by databases and hand pick methods. AHSC, academic health science centre; PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

rector/vice-counsellor as an AHSC leader, and ‘hospital-led’ to define the hospital CEO as an AHSC leader. The modification was based on the prevalent terminology used by the international AHSC association.

Patient and public involvement

No patient or public involvement in this study.

RESULTS

The database search retrieved 562 articles (after removing duplicates), of which 22 described models of AHSCs developed in various settings. Further readings indicated none of these represented initiatives in developing countries. Hence, no articles were included from the database search. **Figure 1** illustrates the PRISMA 2020 flow diagram for the search result.

The AAHCI webpage identified 26 AHSCs in developing countries, located in Asia (n=13), Europe (n=1), South America (n=7) and Africa (n=5) (**figure 2**). All of these AHSCs had websites from which relevant information could be drawn. The Google search found no additional AHSCs.

A description of each AHSC and a summary of its setup and activities is provided in **table 1**.

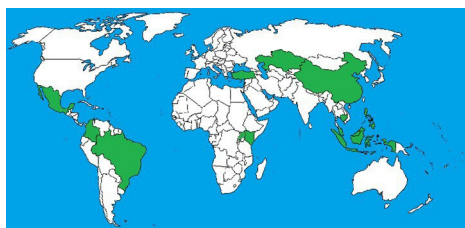


Figure 2 Distribution of AHSCs in developing countries (coloured green). AHSCs, academic health science centres.

Vision, purpose and statement

The vision statements of the 26 AHSCs identified three key aspirations: innovation (n=11), health system improvement (n=9) and enhancement of education and research capacity (n=6). One AHSC included a dual vision statement of innovation and health system improvement. One AHSC has its vision for both human resource development and health system strengthening.

Two AHSCs mentioned only academic development, while 16 cited all three components of health services, education and research. Two centres sought a competitive edge that would help them to become health leaders in their region. Five centres were anointed by relevant authorities, to become exemplary models for other institutions. Seven centres had a focus on community development, although only one of these involved partnerships with community health centres and regional health stakeholders.

‘Self-improvement’ goals were explicitly mentioned in 14 AHSCs. Among them, four sought to establish productive academic environments within multi-institutional settings. Two sought to simplify interinstitutional management, one was aimed to become a centre of excellence in research and another four to enhance workforces. One each was hopeful for more transparency, an efficient governance structure and infrastructure improvement.

There were similarities in the stated goals of AHSCs within the same country, which suggested national agendas. In Indonesia, technology adaptation was a theme, while in China, social service improvement was prominent, and in Columbia, there was a focus on service transformation. However, none were identical, suggesting that each AHSC was afforded some autonomy to adapt to local needs.

Table 1 Profiles of AHSCs in developing countries

Country	Vision (mission, purpose or statement)	Structure and governance					Other enterprise(s)	Clinical enterprise(s)	Community engagement	Workforce capacity building
		Orientation	Integration model	Leader	Academic enterprise(s)	Integration model				
Lebanon	Improving health through education, research, medical care and practice excellence	Innovation	Structural	University	1 faculty of medicine and 1 faculty of nursing	1 teaching hospital	–	Using patient satisfaction surveys and website-based educational tools	No detail	
Lebanon	Becoming a leading academic medical centre by implementing innovative education, excellent research and outstanding patient-centred care	Innovation	Functional	University	1 school of medicine, pharmacy and nursing	1 medical centre	–	No detail	CME and CPD	
Indonesia	Producing excellent health services through evidence-based innovations production, health education and research	Innovation	Functional	University	1 faculty of medicine and 1 research centre	2 teaching hospitals and 7 networking hospitals	–	No detail	Sharing of competency activities	
Indonesia	Enhancing community health status by excellent education, research, community empowerment and health services, based on technology and local values	Health system improvement	Functional	University	1 faculty of medicine	7 teaching hospitals	2 regional governments	No detail	Teleconference-based knowledge dissemination and joint recruitment	
Indonesia	To transform medicine, improve health and reduce healthcare disparity	Health system strengthening	Functional	University	8 health-related facilities	2 teaching hospitals	1 regional government	No detail	No detail	

Continued

Table 1 Continued

Country	Vision (mission, purpose or statement)	Structure and governance					Other enterprise(s)	Community engagement	Workforce capacity building
		Orientation	Integration model	Leader	Academic enterprise(s)	Clinical enterprise(s)			
Kazakhstan	Becoming an advanced model to improve the population health using advanced medical science, effective medical education and evidence-based medicine	Innovation	Structural	University	1 school of medicine	4 premier referral hospital	–	No detail	No detail
China	Promoting medical education reform and scientific research and making efforts for the improvement of infrastructure facilities	Improving education and research	Structural	University	5 health-related schools	10 teaching hospitals, 14 regional hospitals and 69 laboratories	–	No detail	No detail
China	Becoming a research-oriented medical school with comprehensive excellences in clinical services, medical education, scientific research and social services	Improving education and research	Functional	University	1 school of medicine	12 affiliated hospitals and 16 clinical teaching centres	–	No detail	No detail
China	Excellence in medical services, teaching and research and develop into a leading institution in the country	Improving education, research, and health services	Structural	Hospital	1 faculty of medicine	3 affiliated hospitals	–	No detail	CME and health workforce training
China	Developing high-level medical professionals with a sense of social responsibility	Improving education and research	Structural	University	1 school of medicine and 6 public health training centres	11 affiliated hospitals and 6 community health centres	–	No detail	Internal training programmes and overseas exchanges

Continued

Table 1 Continued

Country	Vision (mission, purpose or statement)	Structure and governance					Workforce capacity building		
		Orientation	Integration model	Leader	Academic enterprise(s)	Clinical enterprise(s)		Other enterprise(s)	Community engagement
Cambodia	To be recognised as the national and international leader in health science education through standardised human resource training and development, demand-based research and high-quality health services	Improving education, research, and health services	Functional	University	1 university and research centres	Teaching hospitals and community health services	-	No detail	No detail
Malaysia	To be the centre of excellence in medical education by providing excellent healthcare, education and research programmes delivered with the efficiency, sensitivity and enthusiasm based on local needs	Improving education, research, and health services	Functional	University	1 faculty of medicine	1 medical centre	-	No detail	Training and development programme on education and research
the Philippines	Becoming the national leader in the health sciences through transformative education, collaborative research and excellent health services	Improving the current health system	Functional	University	1 university	1 teaching hospital	-	No detail	No detail

Continued

Table 1 Continued

Country	Vision (mission, purpose or statement)	Structure and governance				Academic enterprise(s)	Clinical enterprise(s)	Other enterprise(s)	Community engagement	Workforce capacity building
		Orientation	Integration model	Leader	Integration model					
Turkey	Becoming a leading and exemplary health university in education, research and healthcare services, leads and directs science and keeps the foundation culture alive	Innovation	Structural	University	1 faculty of medicine, dentistry, pharmacy and health sciences	3 teaching hospitals	–	No detail	No detail	
Colombia	Becoming the national references in high complexity assistance, teaching and research for best outcomes and care for patients and their families	Innovation	Functional	Hospital	1 faculty of medicine and research centres	1 hospital	–	Establishment of the patient service committee and website-based patient engagement	No detail	
Colombia	To facilitate an integrated network of healthcare, teaching and research for customer services and develop intellectual production	Innovation	Functional	Hospital	1 faculty of medicine	1 hospital	–	No detail	No detail	
Brazil	To establish a renowned model of teaching, research and outreach services in the country and abroad	Academic development	Functional	University	1 faculty of medicine	1 teaching hospital, 3 general hospitals and primary health centres	–	No detail	CPD programmes	
Mexico	To integrate innovative clinical, educational and research services through its medical-academic centres	Innovation	Functional	University	1 school of medicine and health sciences	2 hospitals and health institutes	1 financial foundation	Self-help groups for health education and disease prevention	No detail	

Continued

Table 1 Continued

Country	Vision (mission, purpose or statement)	Structure and governance				Academic enterprise(s)	Clinical enterprise(s)	Other enterprise(s)	Community engagement	Workforce capacity building
		Orientation	Integration model	Leader	Integration model					
Colombia	Committing to the social development of the region through the conservation, transmission, creation and application of knowledge in health, with emphasis on research, and articulated with teaching and extension	Innovation	Functional	University	1 faculty of medicine	1 university hospital	-	No detail	CME by face-to-face and teleconference-based courses	
Colombia	Researching to increase students' academic quality, increase student mobility and knowledge transformation through academic activity	Academic development	Functional	University	1 faculty of medicine	7 hospitals	-	No detail	Continuing education for professional and managers	
Brazil	Offer teaching, research and culture and extension activities, with emphasis on multidisciplinary and multi-institutionality	Improving the current health system	Functional	University	1 medical school	Hospitals, comprehensive care units and primary care	-	No detail	No detail	
Kenya	Setting the high standard in the region by providing patient-focused, team-based healthcare, evidence-based medicine and cutting-edge research	Improving the current health system	Functional	Hospital	1 faculty of medicine	1 university hospital and 47 medical and diagnostic centres	-	No detail	Mentoring programmes and CME programmes	

Continued

Table 1 Continued

Country	Vision (mission, purpose or statement)	Structure and governance					Other enterprise(s)	Community engagement	Workforce capacity building
		Orientation	Integration model	Leader	Academic enterprise(s)	Clinical enterprise(s)			
Kenya	To become a centre of excellence in the training of healthcare providers of all levels by producing competent healthcare providers in all provider settings	Health system strengthening	Structural	University	1 faculty of medicine	1 teaching hospital	-	Community representative in the executive board	No detail
Kenya	To be a leading centre of excellence in research for human health	Innovation	Structural	Research centre	1 research centre, 1 graduate school,	1 hospital	-	No detail	No detail
Uganda	To be a leading and transformational institution for academic excellence and innovation through innovative teaching, research and provision of services responsive to societal needs	Innovation	Structural	University	1 faculty of medicine	1 teaching hospital	-	No detail	Provision of short courses programme
Uganda	Uphold the public trust, discover new knowledge and contribute to the cure of human diseases	Human resource development; Health system strengthening	Structural	University	1 university faculty of medicine	1 private teaching hospital	-	No detail	CPD programme

AHSOs, academic health science centres; CME, continuing medical education; CPD, continuing professional development.



Structure and governance

The identified AHSCs were formed either via functional (n=16) or structural (n=10) integration models. The functional model was characterised by integration with shared values and objectives without unifying legal and business entities.³² This model involves joint leadership across key members. External personnel may be included with the specific required expertise, such as in partnerships and customer representation. The structural model merges all members into one business entity and typically appoints a single lead entity to direct both the academic and health interests of the partnership.³²

Only four AHSCs comprised hospital-led partnerships. The leading hospital either had a historical relationship (n=1) with the academic institution or was owned and operated by the university (n=3). The other 21 models were led by a university or a relevant health school or faculty within a university. Meanwhile, one of them was led by a research centre.

In terms of members of the AHSCs other than the leading hospital and university partners, 16 involved affiliated hospitals or community health services. Three centres were completely integrated into the regional health system, determined by the active participation of local health authorities in determining organisational strategies. Four AHSCs included research centres and one each included laboratories, industry partners and philanthropic organisations.

Community engagement

Twenty-two AHSCs did not provide information on community engagement. Of the four that did, arrangements included community representation in the Board of Directors (n=2), the provision of physical and virtual education platforms to the community (n=2), the implementation of patient satisfaction surveys (n=1) and the establishment of self-help groups (n=1).

Workforce capacity building

The development of staff within partner organisations was noted by 11 AHSCs. The most common formats for development were continuing professional development (CPD, n=6) and continuing medical education (CME, n=4). Activities included both clinical and management courses and were primarily coordinated by the academic institution. Some CPD and CME were paid activities, making it a source of income for the centre. One centre also noted a programme of overseas professional exchange. Technology adaptations were applied in the form of website-based knowledge dissemination and courses delivered remotely using web-based formats.

Indonesian AHSCs

The first two Indonesian AHSCs were established in 2014, spurred by the need for innovation and improved health partnerships.^{33 34} After a 2-year pilot, AHSCs were formally endorsed by presidential decree,¹⁷ and the Joint

Committee involving the MoH and the MoRTHewas formed to implement AHSCs.³⁵

In 2018, the Joint Committee developed an 8-year development roadmap by appointing five universities to lead an AHSC each.⁸ The primary aims were to enhance public health and cost efficiency of both the health and university sectors. The specific objectives were to improve research productivity, enhance health education productivity and support healthcare delivery.⁸ Each site was afforded autonomy in terms of setting up its operational structure.

Governance similarities were identified in the first year of Indonesian AHSCs. Functional integration was adopted by all sites due to regulatory inflexibility,^{24–28} with leadership by health faculties, tertiary hospitals and university hospitals. However, one centre plan to advance its partnership into a structural alignment.

Four AHSCs include affiliated hospitals and community health centres,^{24 27 28 34} and two include provincial health offices as members.^{25 28} Two AHSCs have declared their priorities, these being maternal and child health (both), non-infectious diseases (both), infectious diseases (one) and health tourism (one).^{27 34} Other declared interests were improvements to human resource management, the development of facilities, interprofessional education, knowledge dissemination, improvements to referral systems and informing policy.

No details of community engagement were mentioned by any of the five Indonesian AHSCs.

Activities pertaining to workforce development were found among all five models. Three AHSCs have joint recruitment to standardise workforce quality in all stakeholders.^{25 27 28} Two endorse academic promotion for their hospital workforces^{25 27} and one has a framework for the sharing of competencies among members.²⁷ Furthermore, two centres have an integrated remuneration scheme between universities and hospitals to ensure financial equity.^{25 28} One AHSC provides medical staff with the practice permit to work across all member hospitals.²⁶

DISCUSSION

The present review of AHSCs in developing countries has provided insight into AHSC models in developing countries. Multiple themes were identified including that most have a vision and or mission to innovate, improve health systems or enhance education and research capacity. Most AHSCs are led by universities rather than hospitals, have functional rather than structural governance and include community health centres and public hospitals as stakeholders, but community engagement is limited. Workforce capacity building is implemented in some centres, with clinical and management training being the most common activities.

AHSCs internationally have been usually developed around joint visions and or missions to improve education, research and health services.⁹ These are interlinked and drive specific activities such as translational research

and the upskilling of healthcare professionals in both academic and clinical practice. AHSCs in well-resourced countries tend to have visions aligned with promoting healthcare improvement, excellence and innovation, as typified in the UK and Australia.^{13 14} In resource-limited settings, AHSCs appear more focused on strengthening existing systems and improving efficiency, as well as achieving outcomes that approach international standards. Most Indonesian models seek to strengthen the health system, with some including the term ‘innovation’ in their statement, although loosely defined. ‘Innovation’ and how it aligns to improving the health system and health within Indonesian AHSCs may benefit from greater clarity.

AHSCs generally operate under joint leadership models involving academic institutions and healthcare providers, with shared decision-making processes that are evidence based.³⁶ This aligns with AHSC models in developed countries, especially in the USA, where models are generally academically led.⁹ In Australia, AHSCs are health service-led to ensure priorities are based on health system needs and research is focused on implementation and impact in practice.²⁷ This may differ from academically led models, which focus on academic excellence and research as pursuits unto themselves. In low-resource settings, a clear focus on unmet needs, health system and community priorities and a focus on research translation is vital if these centres are to deliver on their vision to improve health systems.

Continuous healthcare improvement and adaptability to change also emerged as a common theme.³⁶ Healthcare improvement is highly complex and requires system-level change and integration of both rigorous implementations of science methods and pragmatic application, with clear leadership and understanding of processes, context and complexity.³⁷ Given the centres integrate research, healthcare and education, they would appear ideally positioned to generate new evidence and enhance the field of effective healthcare improvement, which cannot be delivered by one sector alone.^{38 39} However, ongoing research and evaluation are needed to demonstrate whether these centres can deliver effective, rigorous and tangible healthcare improvement.²⁷

AHSCs also generally seek to engage stakeholders around agreed priorities, shaped by local health needs and stakeholder capacities. To engage stakeholders in healthcare, the problem needs to be understood, including the complexity, and stakeholders need to work together around agreed priorities and ongoing engagement. The priorities might be related to international targets, such as SDGs, or ‘self-improvement’, and may include a range of strategies such as systems change or adoption of technologies. Theme-based focus is common in other countries. However, there is limited evidence that a theme-based approach is effective in these centres, which are in themselves complex system-level interventions, seeking to support improvement across all clinical areas.

Most centres internationally, especially throughout the UK and Australia,²⁷ and in low-resource countries, including Indonesia, have thus far adopted functional integration as governance models. Functional integration ensures ‘checks and balances’ among stakeholders, provides flexible task distributions and may mitigate financial risks.³⁷ In Indonesia, the Joint Committee is targeting structural integration as the long-term goal,⁸ which will mean academic-health partnerships operate as single legal and business entities.³² Benefits may include greater agility and transparency^{32 36 40} as well as financial sustainability.⁴¹ Some challenges with structural integration include ‘siloeing’, with ministerial authorities with academia and healthcare, respectively, the purviews of the Ministry of Education and the MoH. Roles and responsibilities of academic institutions in the health system are also not well identified.⁷ Furthermore, there is significant decentralisation of the healthcare system. Health authorities at all levels of government (national, provincial and regional/city) can develop policies independently, which can cause authority line fragmentation and disruption of communication.⁴² Functional models have the potential to engage across silos between academia and health and across the healthcare continuum, and hence have the advantage of not competing as an entity with its partners. However, more evidence is needed to inform on optimal models in different settings.

Most AHSCs in developing countries are led by universities. In Indonesia, the Joint Committee advocates for university-led models. Despite the academic-centric leadership, findings suggest that most developing country models are health outcome oriented. Indicators developed by the Indonesian Joint Committee have not explicitly included targets for health service.¹⁸ Hence, ensuring the Indonesian centres focus on health service outcomes to meet their aims is critical.

Indonesian AHSCs are required to include at least provincial health offices. The present review in developing countries has identified other stakeholders of relevance, including community health centres, research centres, payment providers and community groups. In most developing countries, AHSCs have university leadership, with the co-development of joint strategic directions and the establishment of well-defined roles and responsibilities. Leaders from universities, hospitals and provincial health offices need to serve on the Boards.

Despite its recognised benefits,^{9 43–45} the present review has found that community engagement in developing countries remains limited and seems undervalued. This contrast with AHSCs in the developed world, with those in the UK, USA and Australia,^{46 47} being particularly community-focused to improve the health of poor, underserved populations and vulnerable groups.^{11 48} Present findings also suggest that community involvement in the AHSC would address healthcare disparities, develop equity-focused healthcare and strengthen community capacities.⁴⁹ Despite the limited information, several community engagement features in developing countries



were identified in the grey literature, including community representation on the Board of Directors, the provision of physical and virtual education platforms to the community, the implementation of patient satisfaction surveys and the establishment of self-help groups. One Indonesian AHSC included customer satisfaction in its shared objectives,³⁴ but none mentioned community involvement in strategic or operational matters. The Joint Committee also did not highlight the significance of community involvement. However, community engagement is growing in Indonesia, with the recent formation of patient advocacy groups, such as the Indonesian Consumer Foundation, the Indonesian Cancer Foundation and the Maternal Health Foundation. Indonesian AHSCs now have greater opportunities to engage communities as a matter of priority, since community trust and participation are prominent factors for AHSC success in improving population health.⁵⁰

AHSCs can build and support the health workforce through capacity and capability building. Many centres in developing countries have activities such as CPDs, CMEs and overseas exchanges, but only one is included in its mission to develop a framework for competency sharing.²⁵ Other centres focused on administrative issues such as the implementation of joint recruitment, academic promotion for hospital workforces and allowance of medical staff to work across all member hospitals. The Joint Committee has not included workforce capacity building as an indicator for AHSC implementation. However, literature from developed countries suggests that Indonesian AHSCs should prioritise workforce capacity building to ensure healthcare improvement, high-quality care and research. Web-based opportunities have been leveraged in developed countries to enable rapid low-cost scalable education and this may offer significant knowledge dissemination and training opportunities in low-resource countries. This is important in acknowledging that ultimately, human capital is an organisation's greatest resource.

To capture learnings and harness opportunities, further studies using primary data are needed to detail the understandings toward AHSC implementation in developing countries. The progresses of the first five Indonesian AHSCs also need to be evaluated, with a full report detailing the challenges encountered thus far. The ongoing supportive formal review would be advisable, equivalent to the Flexner report in the USA,⁵¹ the Darzi report in the UK⁵² and the current review underway in Australia.^{53 54}

Limitations

Several limitations of the present review warrant mention. First, details might have been absent from the gathered sources, which would have made the analysis incomplete. The non-peer-reviewed material in the grey literature was also not assembled for AHSC evaluation. The analysis was limited to the AHSCs registered on the AAHCI website and may have missed other AHSCs in developing

countries. Furthermore, the targeted review of relevant documentation and engagement with Indonesian stakeholders may have been incomplete. However, given the highly specialised and circumscribed nature of AHSC development to date in Indonesia, this was unlikely.

CONCLUSION

This literature review highlights key features of AHSC models in developing countries that provide insight for the ongoing development of AHSCs in Indonesia. Both innovation and health system improvement are the common visions found in the literature. Functional integration governance models are more common internationally, and by reaching across the multiplicity of stakeholders and silos in Indonesian healthcare and academia, seems more suitable than structural alignment. Participation of community health services and provincial health offices provides added value, but community participation and workforce capacity building are identified opportunities that are yet to be prioritised.

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