

Promotion of health research in low resourced settings

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Health is the fundamental core for human development and is the foundation for the socio-economic development of a nation. Health research aims to strive for improving existing services, novel interventions, evolve healthcare and enhance health equity [1]. Epidemiological research is vital for health statistics, which is essential for informed decision making through identification of health priorities and for monitoring the effects of health interventions. Clinical research provides opportunities to identify characteristics of health conditions, some of which are unique to low resourced countries and can provide insights to proper clinical care [2]. Whilst, interventional and translational research are important to identify effective, culturally acceptable and cost-effective strategies in curative and preventive sectors, as well as in health promotion [3]. Hence, in the modern era where there is rapid urbanisation and epidemiological transition, health research is vital in improving medical care by providing cost-effective interventions and universal healthcare to people [4,5].

Most low and middle-income countries (LMICs) are located in the Southern hemisphere and account for 83% of the world's population [6]. LMICs have a life expectancy of 71 years, whereas in high income countries (HICs) it is 81 years, likely attributable to the improved education, high levels of employment and developed health systems [6]. Most LMICs are faced with overcoming the barriers

of malnutrition, high rates of illnesses, poor education and lack of investment. Through proper planning and management, HICs have succeeded in maintaining a higher life expectancy, through demand-driven research, eventually improving standards of living [7]. Nevertheless, several LMICs like Sri Lanka have been able to attain remarkable achievements with higher levels in health indices [8].

Only 10% of global funding for health research is spent on diseases that affect more than 90% of the world's population. For example, it is estimated that pulmonary diseases, HIV/AIDS, diarrhoea, tuberculosis and malaria which together account for almost 16% of the disease burden in the world [9], receive less than 1% of the total funds dedicated to health research [10]. This has resulted in alarming rates of mortality due to the above diseases in the developing nations [11], which are also affected with the burden of neglected diseases such as leishmaniasis, dengue and cholera which occur mainly in populations with poor health services [12]. In addition, LMICs are also witnessing an alarming increase in non-communicable diseases due to rapidly changing lifestyles and urbanisation which creates a double burden of disease. This disparity (the 10/90 gap) in health research with respect to poor resourced settings could be due to insufficient research bodies, poor collaborations, inadequate funding and lack of skilled staff [13].

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Challenges for health research in LMICs

“All nations should be producers and users of research as well as consumers”, a key message from the 2013 World Health Report, although not yet true when it comes to LMICs [1]. Implementation and development of health research in LMICs was conceived by the Commission on Health Research for Development in 1990 [14]. However, over the years outcomes have been unsatisfactory due to many challenges including poor governance, inadequate funding and the influence of competing institutions [16].



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There are many challenges for health research in low resourced settings. One of the key factors is the lack of funding, which in turn could be due to several factors. Firstly, since most of the LMICs are already struggling to provide basic needs for their populations, funds available for health research would already be limited [16]. Moreover, in such economies research takes lower priority in budgetary allocations. Scientific advice is believed to be a key for good policy making [17]. However, policy makers would be ill informed about the importance of health research, thereby hindering financial allocations for research.

In addition to the above there are several other obstacles for promoting health research in low resourced settings. Primary research-based occupations are less financially rewarding and therefore not considered as primary careers by many. For instance, in some countries research experience and qualifications are not considered for employment or promotions in national health services [18]. Moreover, in some settings there are many bureaucratic issues when starting and continuing health research which discourages those who get into health research. Furthermore, some forms of health research are more expensive than other research [7]. For instance, some clinical trials require large sample sizes and therefore is very costly and requires appropriate infrastructure which are not readily available and hence sometimes is prohibitive in low resourced settings. Other types of health research such as genetic, molecular research and research on novel medication and vaccine development require specialised skills, technology and infrastructure, which are not readily available in most low resourced settings [19].

Publication of research evidence is another challenge faced by most LMICs. Majority of scientific publications originates from developed countries, whereas the contribution from LMICs are inadequate [7,16]. This poor publication productivity could be due to lack of investment in science, high article processing charges in international journals, poor manuscript preparation and limited access to scientific literature [7,16,20].

Bridging the research gap in resource limited settings

A multi-faceted and multi-sectoral approach is vital for promoting health research in low resourced setting.

National policy

Health research should be an integral part in the national policy in every country. This needs the political blessing and should come from the highest level in each country. The WHO's 2012 statement on "Research and develop-

ment to meet health needs in developing countries" propose national level taxation as means of raising revenue for health research. The report emphasises that all nations should commit to spend at least 0.01% of GDP on government-funded research and development, while developing nations should allocate at least 0.05-0.1% of GDP to government-funded health research of all kinds [21]. However, priorities of governments would differ, hence academia and researchers have a very important role as advocates in getting research into the agenda of policy makers.

Research funding

Increased research funding goes hand in hand with the recognition of research in national policy. Investments in health research should be shown as a long-term investment in the development of the nation. Increased funding in health research would certainly increase resources available for research [7]. It is generally difficult for LMICs to compete with major international research institutions for international research grants. However major international research funding bodies like Wellcome Trust, National Institutes of Health (NIH USA), Medical Research Council (MRC) and European Union from time-to-time awards research grants aiming for research promotion in LMICs [22,23]. Researchers in LMICs should be constantly looking for such funding opportunities and be prepared to apply whenever such are advertised.

Research popularisation

Another important aspect in promoting health research is to encourage young academics to take up careers in research. Therefore, making such careers financially viable in resource limited countries is vital [7]. In addition, recognition of research in appointments for health-related occupations as well as in promotions is another approach that would promote research careers among early health professionals [18]. Moreover, implementing programmes to promote research from school age would also encourage the youth to build their research careers.

International scientific consortia such as the Science Development Network [24] and Global Health Network [25] are platforms where researchers from around the globe communicate and exchange knowledge. These should be introduced and encouraged among researchers in LMICs, to network, enhance their research capacity and strengthen individual skills and knowledge. Promotion of workshops and mentorship programmes such as AuthorAID [26], ASCEND [27] and Emerging Voices for Global Health (EV4GH) [28] will be highly useful for researchers in LMICs to train and develop their research careers in health.

Collaboration and resource sharing

Collaboration and resource sharing is very important for health research that require significant funds due to large sample sizes, need for high tech equipment and resources [29]. Making costly pieces of high tech equipment available in many research institutions is prohibitive in low-income countries and is a practice that is discouraged even in high income settings. What is generally advocated is resource sharing and collaboration [7]. This aspect can be promoted via research funding agencies which encourage collaboration and resource sharing.

In addition, collaboration of research centers with health care and academic institutions, and the medical industry will also encourage young scientists in both academia and industry to engage in health research, thereby diversifying and enhancing the research culture of the nation. Moreover, establishing research-oriented hospitals that excel over traditional hospitals in technology, obtaining grants, investments, and providing vast scientific experience would open up several doors to conduct medical research in different medical disciplines [30]. Furthermore, establishing Centers for Excellence (CoEs) engaged in cutting-edge research with interdisciplinary collaborative approaches will promote renewed investment in developing nations [31].

Collaborating and implementing vertical research projects could also be highly effective in enhancing research capacity and trailblazing interventions for managing disease burden. However, since LMICs require external funding from collaborators in HICs, conflict in power of such vertical projects may occur. For instance, the programmes may suit the requirements of the international benefactor where a greater priority may be given to diseases alone than to the countries themselves and their healthcare systems [32]. Local institutions can be bypassed with little or no involvement in such situations, for example where samples are shipped abroad for analysis [7,31]. Nevertheless, vertical research programmes while achieving their goals will be instrumental in developing the nation's research bodies and implementing novel strategies. Therefore, to ensure sustainable collaborations countries should follow mechanisms for good research governance that can manage, negotiate, contract and prioritise implementation.

Conclusions

Research is at the nation's forefront for innovation and advancement in the modern era. Health research paves the path in providing standard healthcare while ensuring a nation's wellbeing. The increase of disease burden in LMICs correspondingly deteriorates the standard of living of its citizens. Strict attention should be given by leaders of LMICs for health research by implementing sustainable mechanisms to promote research culture. This could

potentially help developing nations to conquer challenges including malnutrition and poverty. Promotion of health research will ensure enhanced quality of life of individuals, which thereby will ensure socio-economic growth of the nation.

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