





Mentoring as an opportunity to improve research and cancer care in Latin America (AAZPIRE project)

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To cite: Angel MO, Colombo Bonadio R, Harada G, *et al.* Mentoring as an opportunity to improve research and cancer care in Latin America (AAZPIRE project). *ESMO Open* 2020;5:e000988. doi:10.1136/esmoopen-2020-000988

Received 15 August 2020
 Revised 17 October 2020
 Accepted 19 October 2020

ABSTRACT

Effective networking and mentoring are critical determinants of professional satisfaction and success in oncology. There are multiple benefits associated with established mentoring programs. However, these are scarce in Latin America (LATAM). The AAZPIRE project meeting was held to encourage the discussion of mentorship strategies in our region, to create new learning frameworks, and improve cancer care. A group of 30 young oncologists and investigators, together with seven members of LACOG and CLICaP experts of 8 LATAM countries, were reunited to share views and define opportunities, barriers, and possible solutions to implement mentorship programs in LATAM. For each of the mentioned topics, key points were obtained by consensus, and a literature review was conducted to support group conclusions. This article analyses mentoring in LATAM countries and its role on promoting leadership. It will address conceptual frameworks, limitations, and opportunities from the perspectives of both mentor and mentee. The creation of regional and international group stimulation programs and joint projects that impact health policies are attractive, starting points to implement mentorship scenarios.

INTRODUCTION

Mentorship is a relationship between a more experienced or knowledgeable person and a less experienced or knowledgeable one. A mentorship should be symbiotic in nature, beneficial to both the mentee and mentor. It should foster the personal and professional growths of involved participants. Mentoring is a dynamic relationship that centres on career development, academics and the mentee's research output.¹ In academic medicine, historically, investing in the success of the mentees has been an expected responsibility of the mentor and a deeply rooted tradition with a proven path for the development of the future generation of scientists.

Few mentorship programmes or models in clinical medicine and research have been

implemented for trainee doctors and medical students in high-income countries (HIC) in the past five decades. These programmes have resulted in several benefits, including continuous accountability and feedback, acquisition of problem-solving tools, fine goal selection, effective communication, professional networks development and confidence among the programme participants.²

In recent years, the low/middle-income countries (LMIC) have seen a rise in the mentoring culture and practices; however, these were mostly unsupported by institutions. This lack of a formal mentorship programme is responsible for the slower progress in clinical research among these countries.³ The mentorship's strength depended on cultural, economic, and social factors and institutional support and resources.⁴ For successful implementation of mentorship practices in LMICs, a customised pilot programme based on local needs was proposed, which could be scaled up to the national level if found to be successful.^{4,5}

Mentoring programmes have significantly impacted residents' career development in oncology and other medical sciences.^{6–12} When young investigators in paediatric oncology were paired with senior mentors under the Children Oncology Group mentorship programme, around 40% of the young investigators were funded or published, and about 47% of these investigators formed new research collaborations.¹² Furthermore, 74% of respondents said they would consider serving as mentors in the future.¹² Similar mentorship initiatives have been promoted by the American Society of Clinical Oncology (ASCO)^{13,14} and European Society of Medical Oncology, however, such initiatives are lacking in Latin American countries. There is an increasing interest in conducting clinical

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research in countries of LATAM.¹⁵ When medical oncologists based in LATAM were surveyed to understand the challenges and barriers in conducting research, most reported regulatory issues, lower budgets and high costs of conducting research, however, they were not asked about the availability of mentorship to conduct research.¹⁶ Not much is known about the mentorship practices in LATAM in clinical medicine and research, especially in oncology.

In order to understand the opportunities and challenges in creating a mentorship programme for clinical researchers in oncology in LATAM, the Latin American Cooperative Oncology Group (LACOG) and The Latin American Consortium for Lung Cancer Investigation (CLICaP) collaborated under an *International Regional Experts Project* (AAZPIRE project) supported by Astra-Zeneca Oncology.

This qualitative study was conducted to collect responses from young investigators as well as senior physicians in LATAM regarding their perspective of mentorship and create a framework that would guide the creation of a mentorship programme in LATAM.

METHODS

We conducted a focus group meeting by inviting 30 young oncology investigators from 8 LATAM countries (Argentina, Colombia, Mexico, Peru, Costa Rica, Panama, Chile and Brazil) to participate in the AAZPIRE project. Also, seven senior members of LACOG and CLICaP were selected for this study based on their experience in mentoring history and his publications and experience in grant funding in clinical and translational research in LATAM. The young investigators were selected on the oncology department chairs' recommendations in various institutions across LATAM based on the investigators' academic profile and potential to conduct clinical research. The majority of the young investigators were from Brazil (7 (23.3%)). At the same time, Argentina and Colombia sent five participants each country (33.2%), four (13.3%) from Mexico, three (10%) from Peru and finally, Panama, Costa Rica and Chile sent two (6.66%) participants each country with an equal ratio of male and female participants with a median age group of 30 years.

The sessions were guided by a prework template designed by the selected mentors from LACOG/CLICaP. Structured discussions included topics such as the role of medical leaders in shaping cancer policy in LATAM, the current and future status of cancer research in the region (sponsored and institutional cancer clinical trials), and the structure of effective mentoring programmes. Discussions on mentoring programmes included the design of new mentoring programmes and their institutionalisation; the structural challenges in setting up mentorship programmes; the challenges in mentor–mentee interactions; creating a template to train mentors in comprehensive mentorship activities; and the expectations for mentees. After these discussions, all participants were encouraged to provide a score out of 10 for three aspects:

1. General features of cancer research and education in LATAM.
2. Barriers and solutions to implement a mentorship programme.
3. Opportunities and ideal characteristics of mentorship in LATAM.

Conclusions were achieved by summing up the scores of all the AAZPIRE participants.

Furthermore, to support the generation of the summary document, a literature review was done through structured searches of medical literature in PUBMED, the Registry of Clinical Studies of the Cochrane Library (update of May 2005), Biosis and Embase, since 1966, 1992, 1994 and 1974, respectively, until 1 December 2019. The Ovid platform using the following keywords: “clinical research” AND “mentorship in LATAM” AND “mentor training program”. Additional strategies were designed for the Lilacs, Best Evidence (from 1989 to 2019) and CINHAI databases, using similar criteria (LATAM grey literature searches). Also, the data obtained from Google scholars were examined, emphasising articles published in Spanish and Portuguese. The first two discussed points are described in the first section of our review, while the remaining paragraphs address opportunities and characteristics for mentorship in LATAM. The main themes that emerged from structured discussions in the focus group meeting are summarised in [figure 1](#).

DISCUSSION

The AAZPIRE project was conducted to understand the status of mentorship in clinical research in LATAM. The following critical issues were identified using structured discussions with participants in focus groups and structured literature review.

Mentee-centred mentoring

The focus group discussions revealed that participants understood that both mentee and mentor benefited from a mentoring relationship; however, it was essential that the focus of mentoring revolved around mentee's research skills. Occasionally, a young mentee may struggle to express their ideas during a mentoring relationship. Consequently, it was agreed unanimously that the mentorship process should avoid conflicts between the mentor's interests and the mentee's motivation and development in conducting research. On the other hand, a mentor's tasks should include encouraging project initiatives, discussing short and long-term goals, selecting achievable and public health relevant objectives, establishing deadlines and even recommending drastic changes, if necessary. However, it was also recognised that the mentor's most valuable roles involved sharing their experiences and frustrations, supporting the mentee in times of crisis, creating professional networks to help to ‘grow in the company’, and explaining the implicit work culture associated to mentee's interests. Establishing a mentee driven relationship implicates that no structured rules should

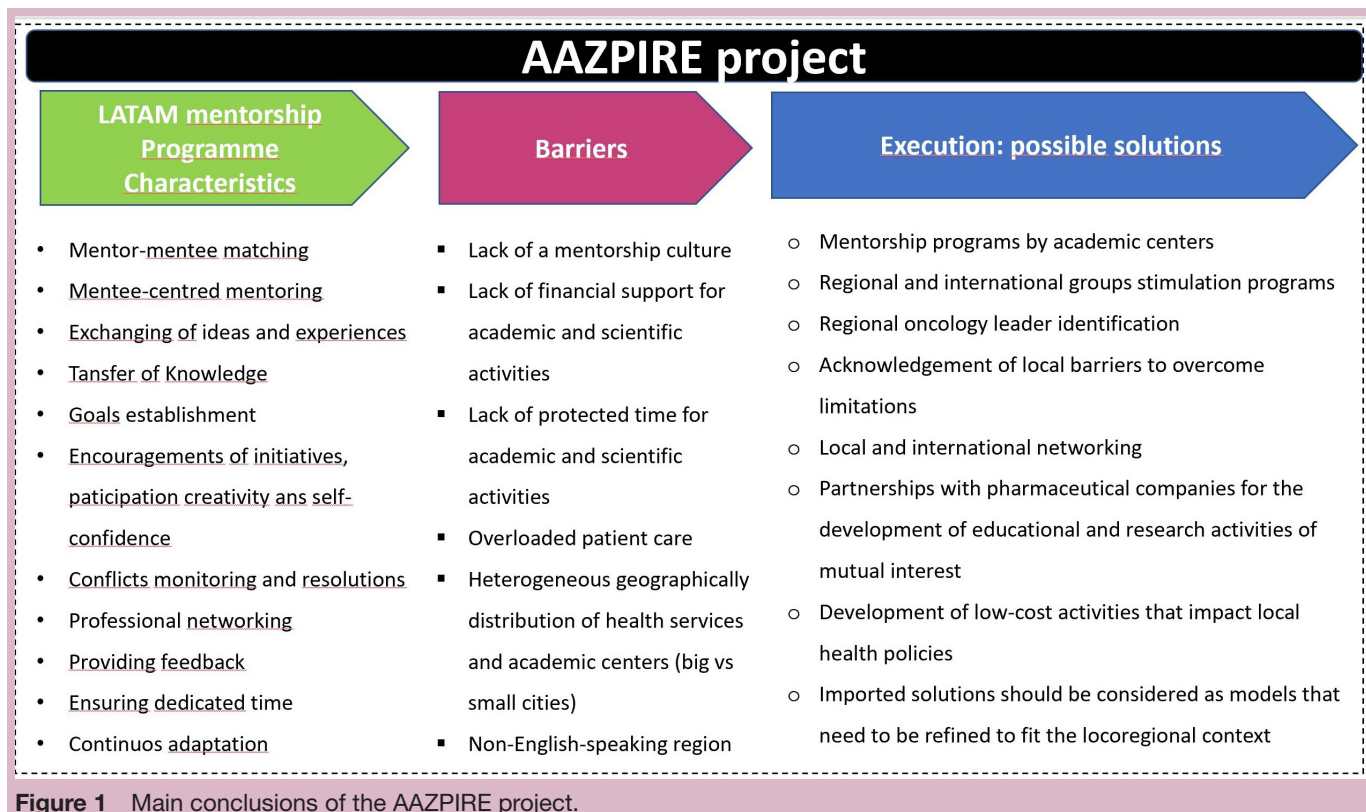


Figure 1 Main conclusions of the AAZPIRE project.

be strictly followed. Mentors should pay attention to the mentee's personality traits and try to act in accordance to obtain optimal results. From this perspective, communication skills play a crucial role, and mentees should not hesitate to seek guidance when such obstacles arise. Finally, we highlighted that mentoring was a dynamic learning experience. Therefore, encouraging feedback from both sides was important. This process should be considered a genuine and constructive part of the relationship and may allow the mentees to talk more freely. With that purpose, dedicated time to feedback should be guaranteed. These opportunities to reflect on past mistakes and discover new work strategies were central to every mentorship and should not be missed. Thus, developing a mentee-centred mentoring demands time, effort, and often exploring a new landscape from the mentors.

Factors to consider about cancer mentoring in LATAM

Our study highlighted a lack of mentorship culture across LATAM countries (figure 1). Providing better care to cancer patients and integrating clinical practice, education and research is imperative for a cancer centre. The role of mentorship has been shown to be an important driver behind the success of young oncologists in pursuing clinical research and career in oncology.¹⁷ In contrast, the complexity of LATAM's health systems and lack of mentorship forces young physicians to be almost exclusively dedicated to clinical practice, relegating academic education and research development.

LATAM is a vast region comprising multiple and heterogeneous cancer care systems. A few high-level academic

centres with high technological resources, mostly funded by private organisations, tend to be clustered in the capital or high-density cities. Only a small fraction of these centres include research training during the residency. Those interested in research tend to migrate to HICs to pursue doctoral studies resulting in a brain drain in LATAM.^{18 19}

Due to a lack of protected time and funding to pursue research, the culture of mentorship has not been nurtured in academics in LATAM. Although incipient mentorship activities can be found in some cancer centres, they are almost exclusively implemented informally in clinical practice training programmes. Nevertheless, these activities are mostly driven by individual motivation on the part of mentors rather than institutional policies. Across many countries in the LATAM, the vertical integration, hierarchical and oppressive structures have been the axis of medical education, promoting paternalistic culture rather than a 'mentoring culture', in which mentor and mentees are empowered in mutual growth.²⁰ Most of the mentors are young, internationally trained fellows or scientists with doctoral degrees who learnt the culture from institutions in HICs with a strong tradition of mentoring.

Recognising the critical contribution of mentors could be the cornerstone of implementing a mentorship programme in LATAM countries. The institutionalisation of mentorship and adaptation of these practices based on different cultural contexts in LATAM are urgent challenges.

Cancer research in Latin America: weaknesses and opportunities

In LATAM countries, basic and clinical cancer research encountered various obstacles that hindered results in past decades. The low level of funding for research, regulatory delays, lack of training in clinical research in LATAM oncologists, and lack of interest in the field of oncology were the main concerns for investigators.^{16 19 21}

Funding for research by the governmental agencies and pharmaceutical companies was lower in LATAM compared with the other continents, which was directly correlated with scientific output.¹⁵ According to the Organisation for Economic Cooperation and Development, the proportion of gross domestic product (GDP) designated for research and development in 2017–2018 was 0.54, 0.16, 1.26, 0.36, 0.26, 0.44 and 0.31 in Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador and Mexico, respectively. In contrast, GDP proportions assigned for research and development were 2.82, 3.02, 2.84, 2.2, 3.26, 2.07 and 3.37 in Belgium, Denmark, USA, France, Japan, Norway and Switzerland. On average, while the GDP proportion invested in research and development was 0.71 in Latin America and the Caribbean in 2017, in the USA and countries of Europe and Central Asia, the amount invested was 2.74, 1.98% of the GDP in 2018, respectively.²²

Another common issue was the extended periods of time needed for regulatory approval of research projects and the development of full-text publications. The approval periods in LATAM countries were longer as compared with that in countries in Europe, Asia Pacific, North America and Africa.¹⁹ This delay was detrimental to motivations for young oncologists to pursue research as well for pharmaceutical sponsors to invest in clinical research in the LATAM.

However, another challenge faced by Latin American researchers is the lower likelihood of being published in high impact journals. Different factors may explain this observation. Lack of training in clinical research, language barriers and lack of funding to conduct rigorous studies may partly contribute to it.^{15 18 19 23} There has been a lower interest in pursuing clinical research in LATAM due to limited infrastructure and high clinical demands.²¹ Despite these challenges, there are few opportunities and strengths for conducting research in LATAM.²⁴

In recent years, there has been an increase in the number of publications and abstracts originating from LATAM countries.²⁴ About 20% of the abstracts submitted for ASCO were non-LATAM in origin; however, they had at least one LATAM author collaborating. However, the distribution of abstracts presented and papers published was markedly heterogeneous, with Brazil consistently producing the most publications. In a methodological search for abstracts that led to subsequent full-text publications between 2000 and 2010, Brazil, together with Mexico, Argentina, Peru, Chile and Cuba, have contributed to as much as 96% of cancer research full-text articles.

Panama, Bolivia, El Salvador, Guatemala, Honduras and Paraguay did not publish any article.

Spanish and Portuguese are the two main languages spoken in most LATAM countries, which could simplify communication between researchers across these countries and foster a collaborative research network. The lack of nationwide epidemiological data creates an opportunity to harness regional talent and health systems to create a registry at low costs that will provide information that may lead to multi-institutional research projects and impact national health policies.¹⁹

Conceptual framework for cancer mentoring in LATAM

Based on the findings from discussions with young investigators and senior members, we developed a framework needed to create a mentoring model relevant for LATAM researchers. Bearing in mind that mentoring involves significant efforts from both mentors and mentees, the first step to identify potential needs and main goals of the mentoring programme. Figure 2 contains a list of potential necessities of LATAM in-training oncologists and opportunities that might be favoured by creating a successful programme. These goals should be emphasised at the time of orientation of the mentoring programme.

The next step in establishing a mentorship programme is to design a project plan carefully. A mentoring plan should cover the following areas¹: encourage participation,² mentor–mentee pairing,³ define objectives for the first meeting,⁴ monitoring and guidance in case of conflicts.

Preparatory work before matching will be of vital importance. Mentee and mentor's specific expectations and interests should be assessed and considered in the matching process. The creation of mentor networks should be effectively encouraged and may prove particularly valuable in cases that the designed mentor's expertise does not entirely cover mentee interests.

The first meeting will be an opportunity to establish a friendly mentoring atmosphere. Getting to know each other, establishing a work etiquette and defining achievable goals are vital parts of this first contact. In this context, trust and commitment should be characterised as the basis of a successful relationship. Additionally, it will be desirable that mentors offered the possibility to explicitly give support in circumstances not strictly related to shared projects. Specifically, in oncology, it will be essential that experienced professionals provide guidance to young physicians about dealing with difficult work situations, patient education and communication, critical review of the evidence, and the process of making treatment decisions. Successful relationships need to be nurtured. Consequently, setting an infrastructure to monitor mentoring projects and to resolve potential conflicts will be necessary. In this regard, strategies such as appointing qualified programme managers and human resources professionals and encouraging participants' multidisciplinary networking will be helpful strategies.

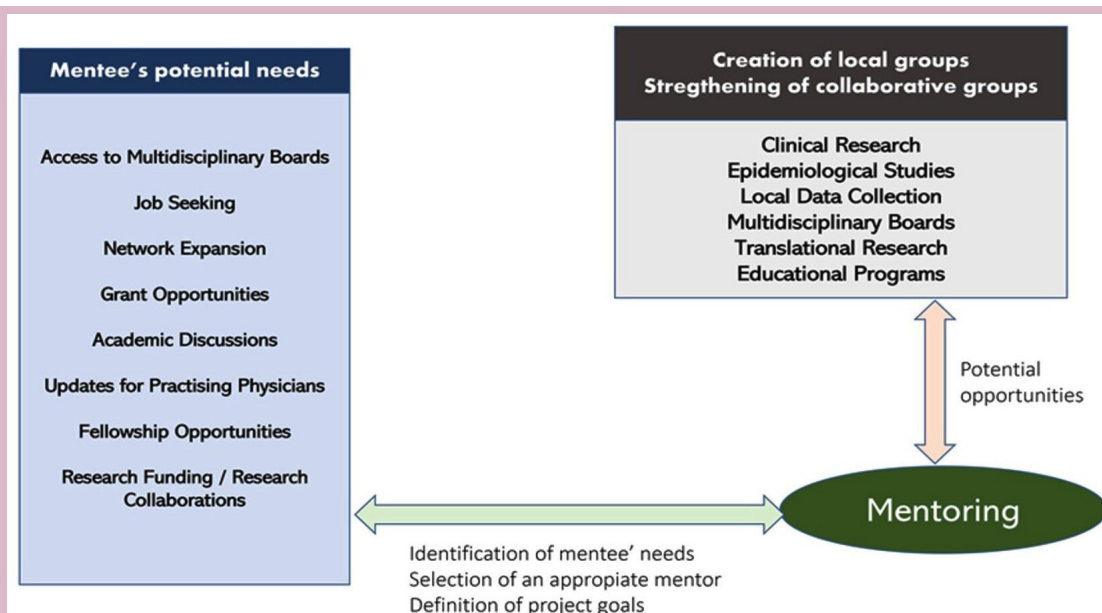


Figure 2 Framework for mentoring in LATAM.

Mentoring is a remarkable opportunity for professional development. It can enhance job satisfaction and can be a breeding ground for collaborative projects. Rather than encouraging isolated relationships, it is highly imperative to gather interested and motivated professionals, set common goals, create a comprehensive mentoring programme, which will be likely improved over the years (figure 1).

The experiences of HIC have shown that mentorship is an effective strategy to encourage professional development and to promote regional collaboration.¹⁷ Nevertheless, participants of the AAZPIRE projects have highlighted unique characteristics that should be considered for its implementation in LATAM, considering the challenges young professionals face in our region.

In this context, the implementation of a mentorship programme should be focused on the development of low-cost projects that may produce impact on regional public health, such as real-world data studies, projects that involve technologies and methodologies offered by centres of HIC, research dedicated to pharmacoecconomics or studies that may be associated to the application of modern healthcare processes in local practice.

To achieve this objective, regional oncology collaborative groups should develop strategic alliances with HIC oncology associations, write grants with the support of local public health systems, and seek funding from pharmaceutical companies and philanthropy funds under private organisations' corporate social responsibilities. Consequently, mentorship programmes should be created in the context of predefined regional projects. Furthermore, the creation of young committees and the development of virtual platforms may facilitate mentorship relationships. Initial steps include developing a common framework that may be applied in different regional groups, gathering potential mentors and creating a work

etiquette. This may be followed by the implementation of mentoring activities in existing and new collaborative projects. Importantly, collaborative groups should adopt and encourage a mentoring culture and establish a dedicated budget for its execution. Our study had a few limitations. The project included young investigators and senior members who were motivated to do clinical research and be a mentorship plan. Their views and needs may not be representative of general oncology young physicians of the region. This was a qualitative study to understand the investigators' perspective regarding the mentorship programme's opportunities and challenges. More efforts will be needed to generate data from pilot mentoring projects to see if the mentoring framework is useful in LATAM countries. Our study was the first to understand the challenges for mentorship and develop a framework to create a mentorship programme. The participation of eight countries with diverse backgrounds helped us understand the similarities and differences in challenges for research mentorship for physicians that would ultimately benefit a population of 600 million in the LATAM.

CONCLUSIONS

Strong academic and research programmes led to unprecedented advances in cancer medicine. A key strategy to maintain this advance is mentoring, which allows the formation of highly specialised professionals who continue this progress. While mentoring is primarily adopted in HIC, such as the USA and European countries, it is scarce in LATAM countries. Although some challenges are faced to improve cancer research in LATAM, significant opportunities exist in the region. In this way, mentoring is a valuable tool to achieve this purpose since it provides a unique opportunity to significantly impact young professionals, contributing to an improvement

in local research and cancer care. Thus, based on the recommendations provided here and on the examples of HIC, mentoring implementation can intensely research culture and capacity in LATAM. Additionally, expanding mentoring programmes can help establish international collaborative groups that would further foster our region oncology professionals' development. Our consensus defined some critical barriers to develop a mentorship programme, such as the lack of financial support, time constraints, the absence of a mentorship culture, and the heterogeneity of health services distribution. Adapting a HIC successful programme may be hampered by these relevant challenges. For those reasons, the implementation of projects oriented to impact local health policies, establishing partnerships with pharmaceutical companies and other private organisations, and creating stimulation programmes with dedicated budgets in collaborative groups could be strategic possibilities to initiate a mentoring culture in LATAM.

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Correction notice This paper has been updated since first published to update author details for 'Gustavo Werutsky'.

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Contributors All authors participated actively in the development of this manuscript in the context of the Latin American mentoring project.

Funding This study was funded by AstraZeneca (AAZPIRE project).

Competing interests None declared.

Patient consent for publication Not required.

Provenance and peer review Not commissioned; externally peer reviewed.

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