

Addressing the Gap in Research Methodologies Education in Pediatric Oncology in the Eastern Mediterranean Region

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PURPOSE Formal training in clinical research methodologies is limited in limited-resource countries. Through collaboration among high- and middle-resource settings and in response to an identified need verbalized by regional pediatric oncology practitioners, Pediatric Oncology East & Mediterranean Group and St Jude Global developed a workshop focused on capacity building in research skills. Here, we describe its structure, implementation, and early results.

METHODS Leveraging virtual capabilities, the format included lectures and small group breakout exercise sessions, for 3 hours per day on 2 consecutive days per week for 2 consecutive weeks. Topics included basics of study design, introduction to health care statistics, research ethics, data registries, and scientific writing. Applicants were required to submit an abstract for a potential research project. Each breakout group selected one abstract for further development and presented the final version in a groupwide session. The participants' experience was evaluated through an online survey.

RESULTS Attendance included 29 registrants from 12 countries and six disciplines. Each breakout group was assigned a themed category: cohort studies, clinical trials, or registries. Critical feedback from the breakout sessions helped strengthen the selected projects, which included a retrospective study, a prospective observational study, a prospective interventional study, and a registry proposal. After the workshop, participants were invited to further develop their original abstracts, and three proposals received additional mentoring, one of which was a multi-institutional prospective study that was subsequently submitted through the Pediatric Oncology East & Mediterranean Group network for implementation. The postworkshop survey revealed an overall highly positive experience, and feedback provided potential themes for future workshops.

CONCLUSION This workshop demonstrated the potential for collaborative network partnerships in targeting research training gaps in pediatric oncology. Lessons learned will be applied to future workshops to strengthen research in limited-resource settings.

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INTRODUCTION

In limited-resource settings, there is little or no focus on formal clinical research methodology training.¹ Most fellowship and specialty training programs rely on trainees to run clinical services, with limited time for research education. Additionally, opportunities for clinical research for nonphysician health care professionals including nurses are limited.² Barriers to research capacity building in limited-resource settings include absence of protected time for trainees, unavailability of local or regional educational funding opportunities, and a lack of mentorship time.³ Over the past few years, driven by the WHO Global Initiative for Childhood Cancer (GICC), there has been a growing impetus to improve the outcome of childhood cancer across the world.⁴ This initiative has identified investment in cancer research

infrastructure and participation in collaborative research networks as a priority action.⁵ While building local capacity to improve direct patient care is an essential component for the success of the GICC initiative, local clinical research is also crucial to identify areas for improvement and barriers to implementation so that improved outcomes are achieved and can inform health policies for future sustainable actions.

The Pediatric Oncology East & Mediterranean Group (POEM)⁶ is a regional network of pediatric oncology health care professionals in the Middle East, North Africa, and West Asia regions. It aims to improve pediatric oncology care through collaborative initiatives, working closely with the St Jude Global (SJG) Alliance network.⁷ Since 2013, the POEM group has been conducting regional scientific and educational

ASSOCIATED CONTENT

Data Supplement

Author affiliations and support information (if applicable) appear at the end of this article.

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CONTEXT

Key Objective

Is it feasible and useful to conduct clinical research workshops focusing on pediatric oncology in limited-resource settings?

Knowledge Generated

A virtual workshop spanning 2 half-days per week for 2 weeks was successfully conducted through collaborative planning and delivery, using regional and international expertise within the Pediatric Oncology East & Mediterranean/St Jude Alliance collaborative group. Participants were of variable specialty backgrounds, included physicians, nurses, and other health care specialists. Evaluation of workshop impact and achievement of learning objectives was positive. Limitations of time and internet connectivity were identified. Participant feedback prioritized specific focus areas for future workshops.

Relevance

Short clinical research training workshops targeting specific specialties such as pediatric oncology using existing international, regional, and local alliances and platforms can be effective in enhancing the infrastructure and regional investigator knowledge in sound research methodologies and clinical research planning.

meetings for pediatric oncology professionals, as well as business meetings to prioritize focus areas of potential impact. Over the course of several clinical workshops, and through feedback from attendees, POEM identified a requirement for formal training in clinical research within the local context. The POEM Group collaborated with SJG on developing a framework for training in research methodologies for pediatric oncology practitioners from different backgrounds and varying levels of research experience.

METHODS

A research workshop plan was prepared and implemented, as detailed in [Figure 1](#).

Research Workshop Committee

A planning committee was formed, encompassing regional clinical researchers from within the POEM group, as well as from St Jude Children's Research Hospital. Committee members were chosen based on their interest and experience in teaching, mentorship, and clinical research. In total, the committee was composed of five researchers from the POEM region (all pediatric oncologists, with two from India and one each from Jordan, Lebanon, and Pakistan), and five researchers from St Jude Children's Research Hospital in the United States (three pediatric oncologists, one biostatistician, and one clinical trials manager).

Online Planning Meetings

Nine online meetings were conducted to plan the workshop agenda and curriculum. It was expected that the workshop participants would have varying backgrounds in research experience and knowledge base. The intent was to evaluate interest in the topic and identify the interested audience and their personal goals, in addition to imparting basic knowledge regarding formulating, planning, executing, and publishing a research project. Continuing medical education accreditation by the American Medical Association was provided.

Although initial plans were for a 2-day onsite in-person meeting, this was modified to a virtual format because of

the COVID-19 pandemic travel restrictions in 2020. To enable attendance within the practitioners' busy schedules and to best accommodate participants across various time zones, the workshop was set up as a half-day (3 hours per day), for 2 days in a row over 2 consecutive weeks. The timing of 15:00-18:00 GMT allowed participants from all time zones to join with minimal disruption.

Finalization of Curriculum

To best utilize the virtual setup, yet maintain a low-cost platform, electronic whiteboards were used for discussion, set up by the organizing team using PowerPoint and Word files. The workshop format included a mix of five didactic lectures, five small group hands-on sessions, and three discussion sessions delivered and mentored by committee members. Participants were required to submit an abstract for a proposed study before the workshop. The plan was to divide the attendees into groups (breakout sessions) of 6-8, with each group choosing one of their abstracts to work on and further develop over the course of the workshop. The final output would be presented by each group at the conclusion of the workshop.

Workshop Delivery

The workshop was delivered as planned, in 4 half-days over 2 weeks in November 2020. Didactic presentations covered clinical studies and methodologies, cancer data registries, introduction to health care statistics, research ethics and governance, and guidance for scientific writing and publishing. Breakout sessions covered discussions of abstract evaluation, and formulation of the objectives, output and deliverables, methodology, timeline, and resources, respectively.

Workshop Follow-Up

At the conclusion of the workshop, an evaluation survey (Data Supplement) was distributed to all participants to rate the quality of the workshop and the knowledge gained (competencies). A few weeks after the workshop, a second

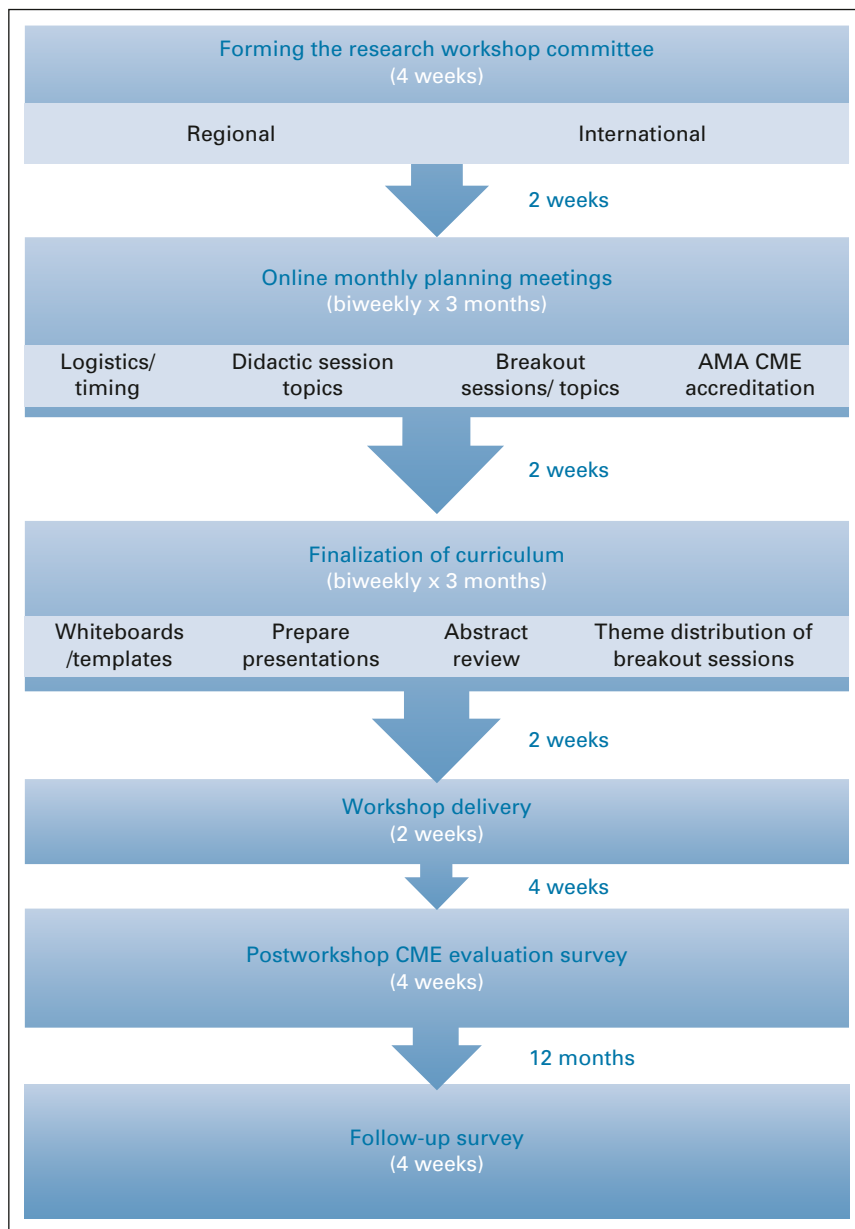


FIG 1. Process undertaken for planning and delivering the workshop. AMA, American Medical Association; CME, continuing medical education.

survey (Data Supplement) was distributed by email to all workshop applicants to identify reasons for choosing to apply for the workshop, prior experience with other research training, and rating of knowledge gained.

RESULTS

Registration for the workshop was opened for a period of 30 days. A total of 38 registrations were received on a first-come basis, after which the application platform was closed because of preplanned capping of participants. Registrants were distributed across 12 countries and six disciplines (23 medical doctors, six research fellows/associates, five nurses, two nutritionists, one pharmacist, and one data manager). Eight registrants (21%) were not previously POEM group members and had the announcement forwarded to them by a colleague. All but one

were interested in American Medical Association continuing medical education credits.

Of the 38 initial registrants, 29 (76%) attended the workshop. Of those participants, 19 (66%) attended more than 70% of the workshop, eight (27%) attended more than 50% but < 70% of the content, and two (7%) attended < 50% of the content time.

The submitted abstracts included retrospective chart review studies, prospective observational studies, prospective interventional studies, quality improvement projects, cross-sectional survey studies, longitudinal survey studies, and registry studies. The breakout groups were accordingly divided by abstract themes, specifically cohort studies (two groups), clinical trials (two groups), and registries (one group). On the first day, each group of 6-8 participants

reviewed all the abstracts submitted by their group and assigned scores on the areas of significance, feasibility, generalizability, and value added, while listing strengths and weaknesses in each of these categories (Data Supplement). This was facilitated by the committee members. One abstract was then selected in each group to further develop over the remainder of the workshop.

Didactic sessions covered the following topics: Fundamentals of clinical research and formulating a research question, research designs and types of biomedical research, introduction to statistical analytic methods, implementation and use of cancer data registries, and how to write up results and publish a manuscript. In the breakout sessions, each of the five groups used preformatted worksheet templates to guide them through developing their proposal. The worksheet templates (Data Supplement) included exercises on how to review and assess an abstract and in writing out elements for a proposed study. Each group used these templates to develop the selected abstract. On the last day, each group compiled their work using a common summary template (Data Supplement) and presented their proposed study to all participants using a common PowerPoint template, detailing the study's background, research question, objectives, deliverables, methodology and statistical plan, timelines and projected deliverable dates, resources needed, expected impact, and next steps. The final output from the breakout groups included a retrospective study, a prospective observational study, a prospective interventional study, and a registry-planning proposal—on the basis of the abstracts selected for development during the first day of the workshop.

The postworkshop appraisal by attendees showed a highly positive overall experience, with more than 90% of participants scoring all content aspects of the course as excellent, very good, or good (Data Supplement). As expected, free text feedback regarding barriers revealed internet connectivity issues and an interest in blended format or on-site in-person future workshops for face-to-face interactions. A few comments advocated for more detailed sessions and a longer course, to be spread out over more days, with more sessions on statistical analysis planning, and on learning to publish. When asked about the most effective aspects of the workshop, 45% pointed out the breakout sessions and the chance for discussion within small groups. All attendees stated that what they learned will impact their practice moving forward. When asked to suggest topics for future workshops on research methodologies, the three topics that were scored highest were: statistical analysis, designing quality improvement projects, and scientific writing and publishing.

After the workshop, participants were advised to further develop their proposals on the basis of what they learned and were offered a private session to review and discuss their modified abstract with the workshop facilitators. A deadline of two months was given to submit revised proposals. Of the initial 38 abstracts, five were submitted

(13%), of which three (8%) were reviewed and discussed, as the remaining two did not follow-up further. Of the three reviewed, one was moved forward as a quality improvement study at the local institution, one was developed further within the POEM group for a multi-institutional prospective observational study, and one was used as part of the participant's graduate thesis at their institution. All applicants reported that the discussions and feedback greatly improved their proposals.

An anonymous survey was conducted after the workshop to better understand the reasons for attendance, availability of other training opportunities, barriers to attending educational workshops, and general feedback. Of the 38 who were e-mailed the survey, 14 responded (37%). Responses to the survey are shown in Table 1. Of all respondents, 50% had previous research experience, and the majority were more than 5 years within profession. Eight (57%) had previously attended research workshops. Eleven (78%) felt that the current workshop met their learning goals, and five (36%) reported barriers related to internet connectivity and time management. Regarding length of the workshop, three (21%) preferred if it were shorter or spread out over more weeks, one (7%) preferred it to be longer and more in depth, and 10 (71%) did not comment on any needed changes in length. All expressed improved knowledge after the workshop.

DISCUSSION

Capacity building for clinical and health research in limited-resource settings has long been identified as a need.^{8,9} However, progress has been hampered because of multiple factors such as lack of protected time, lack of funding for research training, and limited national research funding support, among others.^{9,10} Clinicians and trainees in limited resource countries usually are focused on clinical training with very limited education in research methodologies because of the source of funding and competing priorities.

With the recent progress in pediatric oncology collaborative efforts across the world, bolstered further by the recent WHO-endorsed GICC, there has been a renewed interest in improving local research infrastructure, to enable effective collaborative efforts both in assessing the status of cancer care delivery and implementing changes to improve pediatric cancer outcomes. Thus, the timing of such interventional efforts is optimal and is likely to synergize with ongoing global, regional, and local initiatives.

There have been multiple efforts to enhance training in health and medical research in limited-resource settings with different formats including formal postgraduate degrees, or short courses and online learning, with most initiatives deployed at institutional collaboration levels,¹¹⁻¹⁵ and a few targeting specific fields of research such as mental health,^{16,17} cardiovascular diseases,¹⁰ or hematology.¹⁸ However, there has been very limited training in clinical research focused on pediatric oncology specifically, and none to our knowledge targeting the Middle East, North Africa, and West Asia region,

TABLE 1. Survey Responses

Item	Detail	No. (%)
Profession	Oncologist	6 (43)
	Oncologist-in-training	2 (14)
	Nurse	2 (14)
	Dietitian	2 (14)
	Data manager	1 (7)
	Researcher	1 (7)
Years in profession	More than 10	5 (36)
	5-10	7 (50)
	< 5	2 (14)
Previously had a research project reviewed	Yes	7 (50)
	No	5 (36)
	Unsure	2 (14)
Previously published	Yes	6 (43)
	No	7 (50)
	Unsure	1 (7)
Have a project but need to develop expertise to conduct it well	Yes	7 (50)
	No	6 (43)
	Unsure	1 (7)
Preferred learning method	Video seminars	7 (50)
	Case-based scenarios	6 (43)
	Texts and quizzes	1 (7)
Time able to devote for learning (hours per week)	5-6	2 (14)
	3-4	3 (21)
	1-2	8 (57)
	< 1	1 (7)
Previously taken online courses	Yes	9 (64)
	No	5 (36)
Previously taken a course in research methods	Yes	8 (57)
	No	6 (43)
Types of previous workshops attended	Part of clinical training program	3 (21)
	Part of graduate degree studies	3 (21)
	Free-standing workshop	3 (21)
Were previous workshops effective in addressing your needs?	Yes	7 (50)
	No	1 (7)
If you have not attended previous workshops, what were the reasons?	No perceived need previously	1 (7)
	Cost	3 (21)
	No previous opportunity	5 (36)
	Previous did not offer credits	3 (21)
Reason for interest in this workshop	Fill a knowledge gap	6 (43)
	Develop a research proposal	3 (21)
	Plan to publish a paper	2 (14)
	Develop research skills	4 (29)
	Previous positive experience with POEM workshops	1 (7)
Were your goals met?	Yes	11 (79)
	No	1 (7)
	Unsure	2 (14)

(Continued in next column)

TABLE 1. Survey Responses (Continued)

Item	Detail	No. (%)
Obstacles and barriers during workshop	Yes	5 (36)
	No	9 (64)
	Free-text answers for yes included internet connectivity, having dedicated time, timing, and time management	
Familiarity with research concepts before the workshop	Very familiar	1 (7)
	Moderately familiar	8 (57)
	Slightly familiar	5 (36)
Familiarity with research concepts after the workshop	Very familiar	8 (57)
	Moderately familiar	6 (43)
	Slightly familiar	0 (0)
Future workshop topics of interest to you	Applied biostatistics	7 (50)
	Research ethics	5 (36)
	Clinical trial designs	8 (57)
	Biomarker and correlation studies	3 (21)
	Quality improvement studies	7 (50)
	Cost-effectiveness studies	4 (29)
	Data management	5 (36)
	Implementation science	4 (29)
	Pharmacogenomics	1 (7)

Abbreviation: POEM, Pediatric Oncology East & Mediterranean Group.

which is the geographical area comprising the POEM consortium. Our approach was built on an existing long-term strategic collaboration between the POEM group and St Jude. We aimed for this first research methodology workshop to target a wide range of interested clinicians of different backgrounds and to broadly improve the understanding of basic concepts of how to approach a research project from hypothesis formulation to planning its execution and publication. This included not only pediatric oncologists at different levels of their professional careers but also nurses interested in conducting research studies, where traditionally little engagement in limited-resource settings has been possible.¹⁹

Several opportunities were identified through this initiative. There was a high level of interest and engagement from a range of not only early- and mid-career but also established practitioners. In addition, there was notable engagement by participants from nursing and other health care specialty backgrounds, in addition to medical doctors. The feedback assessment identified specific topics of interest and relevance, which will be prioritized for the upcoming workshops. In addition, this exercise was very informative in how to use virtual platforms for small-group discussions and hands-on workshops within the POEM group and has allowed us to further develop the tools used.

We also identified a need for regional mentorship in research and have since developed a Research Committee

within POEM to work toward addressing these needs. Through such research workshops, and in collaboration with the POEM Research Committee, we hope to assist in bolstering and further development of the regional research infrastructure and enhance the interest and understanding of robust research strategies in pediatric oncology in constrained-resource settings. Furthermore, as this initiative expands into next phases, we will address the optimization and scalability of our efforts.

Limitations were also identified through this project. The virtual nature of the workshop, relatively new at the time, and internet connectivity issues in limited-resource settings, likely contributed to the noted difficulties with on-line attendance. Indeed, the feedback survey from the participants listed internet connectivity issues and time management for virtual meeting attendance as the primary problems hampering effective participation. As for the length of the workshop, the feedback was mixed. We had initially decided on a short workshop to mitigate the time commitment that busy practitioners are able to spare and to limit screen time on any particular day. The feedback received showed this to be agreeable to most of the survey respondents (71%), although three (21%) felt it was too time-intensive and one (7%) preferred a longer format with more in-depth topic discussion. Moving forward, we plan to focus the topics of

future workshops, which would allow in-depth discussion of a specific area, while maintaining a limited time commitment and short screen time per day. As such, a higher number of focused workshops would likely confer the most benefit while mitigating time barriers to participation.

This initiative highlights the importance of systematically identifying strengths and gaps in the local and regional health care delivery systems that could identify opportunities for improvement through carefully designed clinical research via quality and improvement science. Since this workshop was conducted in November 2020, the POEM-SJG partnership has conducted a second research workshop in November 2021, this time with a focused objective on understanding quality improvement methodologies and assessing published research manuscripts. A third workshop is in planning phase for March 2023, for mentored writing of a research study, and will include prework self-paced study sessions. Future workshops will incorporate online courses and recordings as supplements to try to circumvent live internet connectivity problems. The current workshop, as well as the future ones in planning, will be compiled into a Research Methodologies Curriculum, which can then be adapted and used for participants with specific levels of research skills, focusing on contexts relevant to limited-resource settings.²⁰

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