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Radiation therapist research in Africa: overcoming the barriers to reap the rewards

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Abstract

Radiation therapy is recognised throughout the world as an essential modality in the treatment of many malignant diseases. A quality treatment process requires highly competent health care professionals and high-technology equipment. In the majority of countries in Africa there is a desperate need for equipment and skilled therapists and in many countries there is no access to radiation therapy to relieve the suffering of cancer patients. As a region, Africa can therefore be considered as 'under resourced' in terms of radiation oncology services. In this context both service and research are challenged by a lack of equipment, poor maintenance, inadequate funding, inconsistent consumable supplies, a scarcity of competent professionals to ensure optimal use of what is available and excessive workload. Africa therefore has many examples of the situation, where low-income countries generally have a poor research infrastructure. Radiation therapist (RTT) research in Africa has to develop where the barriers to research can in most instances be traced back to a lack of resources and any initiatives to overcome these barriers are frequently blocked by the limitations of a resource-poor environment. To locate the discussion on the research environment of RTTs in Africa, barriers to and benefits of research are integrated with brief information under the following headings: the macro environment, the RTT environment and the RTT research environment. The latter includes insights from interviews and discussions covering the following topics: research now, research priorities, research opportunities and strategies for future research.

Keywords

radiation oncology; resource-poor environment; research agenda; technologist

THE MACRO ENVIRONMENT

The general social, economic and political environment impacts on all aspects of life. The grim reality is that about one billion people around the world live in extreme poverty.[1] Survival is the priority for these people and for most of them there will never be a chance of university studies. In fact the education deficit linked to poverty is such that one of the eight Millennium Development Goals is to ensure that primary education is universal.[2] Natural disasters such as famine and drought and human disasters such as civil war, war across borders, crime and political conflict continuously mould the socio-economic landscape of Africa. In the light of poverty, low levels of literacy and the critical health problems of malnutrition and other preventable diseases coupled with the

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burden of prevalent diseases of malaria, tuberculosis and HIV-AIDS, radiation oncology is given a low priority in most countries in Africa. This even though most of the economically disadvantaged countries are in Africa account for more than 60% of the world's population and have the fastest growing need for radiation therapy treatment.[4] In countries where there is a radiation oncology service it is likely to be under pressure of large numbers of patients for the limited available resources. This is not an environment conducive to active and sustained research by the therapists[5]. However, the introduction of contextual research [research in Africa for Africa and research to change local radiation therapist (RTT) practice] would lead to developing the professionals and in addition would contribute to much needed improvements for our cancer patient. Our research needs to focus on national priorities thereby contributing to the investigation of key problems in radiation oncology in Africa.

THE RTT ENVIRONMENT

The radiation oncology service in Africa remains far short of generally accepted standards, due to the prevailing economic constraints,[6,7] that stifle equipment acquisition and the education and training of staff to operate them.[8,9] In most departments in Africa there are too few therapists to optimally and effectively operate the available equipment and lack of therapists hinders much needed expansion of services. The emphasis is therefore on entry-level education and training of RTTs and minimal resources are available for further studies and/or developing the research skills of RTTs.

The situation in many countries, if not most African countries, is that the salaries of health care professionals, including RTTs, are low. This means that many RTTs engage in income-generating activities beyond their high-workload therapist jobs. Little time is left for research after two jobs, family and community commitments.

In resource-poor environments, RTTs with an interest in research are similar to researchers in other disciplines and they find that access to up-to-date journals and books is a barrier. Conducting a literature review, an essential component of research, is a real challenge.[1] Even more importantly it is less likely that an RTT will consider entering the research arena if they do not have exposure to the research already being done. An initiative launched by the World Health Organisation and the world's six biggest medical journal publishers has provided free internet access to practitioners and researchers in 70 developing countries, including many countries in Africa.[10] This contribution to reducing the health information gap between rich and poor countries is commended and helps to promote research. However, in an environment where therapists do not have easy access to computers and the internet, the potential benefits of such advances are not a means to overcome the problem of information access.

THE RTT RESEARCH ENVIRONMENT

Medical research is important in the promotion of the public good because it is through research that treatment options advance and patient-centred care is enhanced. In Africa the scarce resources must be carefully used and research results must translate into clinical application as quickly as possible.[3] However, a barrier to an effective research cycle that leads to positive change in the management of patients is the absence of reliable data on disease prevalence, treatment administered and patient follow-up because most African countries do not have a national register for radiation oncology. Research can be conducted but the information gathered is limited to local data sources.

Where there is compulsory registration and continuing professional development (CPD) is a requirement of renewal, such as in South Africa, there is a corresponding rise in the number of RTTs attaining further qualifications. The increase in postgraduate students then leads to an increase in research. This, however, is not the situation throughout Africa where most countries do not have a professional register for RTTs and/or CPD is not a requirement.

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RTTs may be competent to practise but for many their education did not include learning to design and implement a research project. RTTs' lack of qualifications and skills is a major barrier in sites where commissioned research, requiring high-quality proposals and well-qualified research teams, is an option. The research that is conducted by RTTs is largely non-commissioned and unfunded research. The lack of funding impacts on a study from design through execution and up to dissemination. The latter is generally via a research report or limited dissemination of the results via academic channels. In addition to this there is the problem that even once research is done the uptake of such research by policymakers is uncertain[11] and the impact on the radiation therapy process likely to be very limited.

Research now

Professional opportunities have allowed me to contact with most RTT departments in Africa. This network has enabled me to gain information which if taken together with a scan of publications and conference presentations can be used as an indicator of RTT research. The finding is that the number of RTT research studies in Africa is small. What is also apparent though is that interest and enthusiasm is growing and research outputs are increasing where further qualifications give access to research involvement.

Important to note is that knowledge that has been generated has not been well documented and disseminated even within the local environments. The important final phase of research is to make the knowledge accessible to others and this is not happening on a sufficient scale. Possibly this is due to there being few local/national sites for publishing and the daunting jump to publishing in an international journal is too big for most first time researchers.

It was not within the ambit of this article to do a full review of publications by RTTs in Africa; however, a limited search of known international radiographer and therapist journals demonstrated that $<0.5\%$ of articles originate from studies in Africa. On the continent there are no journals dedicated to RTT research. The *South African Radiographer*, published by the Society of Radiographers of South Africa, appears to be the only somewhat regular radiographer journal with two editions annually in the past 5 years. The journal includes conference notices, job advertisements, society information, congress reports, book reviews and other information of interest to radiographers. The focus, however, has shifted more and more towards academic publications and original articles. The percentage of research publications has increased and while in 2003 there were academic but no research articles; in the next 4 years an average of 40% of the material is research based. The percentage of academic articles relating directly to radiation oncology is approximately 20% and of the research articles published it is again 20% of these that are radiation oncology. International submissions to the journal are limited; in the past 5 years there has been one research article presenting data not gathered in South Africa and one radiographer from another African country has authored a article using data collected during studies in South Africa. RTTs need to do more research but most importantly they need to publish their findings. Even the radiographer community are not well informed on what studies have been done and certainly this means that the research results are unknown to policy and decision-makers. Only when the RTT research is making in-roads into changing practice in a significant way, we can truly say we are a knowledge-building profession.

Research priorities

Interviews and discussions with RTTs revealed a wide spectrum of research interests and topics. However, connecting these to national priorities was not something any of the RTTs had considered. This implies that at present the limited RTT research that is taking place is focused on research for higher qualifications and that the shift to research for developing knowledge on key health issues must still take place.

Clinical audit came up frequently in my discussions on research. While audit is not considered as research by the purist it does follow a

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research cycle, has immediate clinical application, contributes to the promotion of a quality radiotherapy process and does help to develop research skills and interest. RTT participation in and initiation of clinical audits should therefore be supported and promoted.

Evidence Based Practice (EBP) is a current buzzword and somehow always entered the interview discussions. I do not assume that there is necessarily a direct link between EBP and research, but I do agree that by promoting EBP; critical thinking is developed, there is concerted engagement with current literature, skills in information resourcing and evaluation are honed and ultimately this can promote good research.

The responses to questions on what is considered a research priority can all be captured under the following theme: the role of the RTT in managing the RT process (plan, treat, communicate, patient care, and educate). The key areas that emerged as impacting on the role of the RTT can be grouped as follows:

Comparative planning/treatment/immobilisation options

HIV/AIDS in oncology (e.g. treatment response, technique adjustments, staff training)

Health sector response to malignant disease

Incident reporting

Knowledge and perception studies

Palliative care

Patient satisfaction

Quality improvement in RT process (e.g. treatment consistency, reduction of waiting list)

Quality-of-life studies

Radiation dose measurements

Risk management

Standard of care

The impact of the 1^0 health care approach on oncology

Research opportunities

Oncology in Africa has many parallels with the developed world but also is unique. RTT research can therefore be considered to be largely contextual or applied research. This research is to answer questions generated locally which can contribute to change beyond the immediate locality. This implies that there is research that covers topics that can be researched only by RTTs in Africa but that the findings can impact more widely. If we want to contribute to the public good and develop ourselves as true professionals then we have to take responsibility for the production of new knowledge in our environment.

The challenges for research mirror many of the challenges for practice. However, every environment, even resource-poor departments, offer research opportunities. The barriers are the will and the skill. The systematic process of generating new knowledge and using the scientific method to identify and deal with health problems can be very rewarding personally and professionally and contribute to the quality of care for oncology patients. RTT research could contribute to moving the discipline forward for the benefit of cancer patients in Africa.

Despite the multitude of challenges and barriers, there is the incentive that RTTs in Africa are working in a discipline that is rapidly developing and where the need for research is enormous. It is inevitable that in Africa cancer will be recognised as a priority disease and that radiation oncology will follow as an essential arm for treating this disease. When this transition takes place RTTs should be ready to benefit from the resource allocations and to develop the discipline through good quality research.

A study in the United States of America on RTT practice reconfirms the multidisciplinary work place that exists in radiation oncology.[12] What this study does not cover is research as part of practice yet it is the close

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working relationship between RTTs, radiation oncologists, nurses and medical physicists that offers research opportunities. Where research is taking place in radiation oncology departments, RTTs as members of the multidisciplinary team have the opportunity to gain skills and guidance in research. This opportunity is not adequately recognised or utilised. We cannot sit back and wait to be invited into research by the radiation oncologists and medical physicist. RTTs must take the initiative and then we will be included.

Strategies for the future

It is a sad reality that for many RTTs in Africa the challenges and barriers to becoming involved in research are too many and the rewards are too few. Only with alignment of challenges and rewards, even if this involves a perception change through accepting the personal benefits from being involved in research, will the research agenda develop in the extremely resource-poor environments.

RTT research could drive the RTT service and, promote capacity building of RTTs. According to Harrison and Neufeld,[13] the capacity building of researchers in Africa may be best served through cultivating new ways of knowledge production and knowledge sharing in a research environment that focuses on priority health problems of the country.

The way forward is for RTTs to first up-grade their qualifications; this will in most instances involve doing unfunded research. They will then be equipped to enter multidisciplinary teams as research assistants or co-researchers. Ultimately RTTs can reach the competency needed to initiate funded projects.

International liaison offers an opportunity to some RTTs in Africa and through this edition and other collaborations it is hoped that networking will lead to support by researchers in the developed world for would-be researchers in Africa. Such collaboration will be beneficial to all parties involved and promote good research in our profession.

CONCLUSIONS

The aims of this special edition include key issues relevant to promoting research activity in the therapist community on the African continent. This article highlights the current situation in Africa—a resource-poor environment for the Radiation Oncology discipline. Some of the key challenges and barriers to research, such as lack of formal qualifications, inadequate funding, high workload, poor infrastructure, difficulties with information access, were explored and attention was directed to future opportunities for expanding RTT research. Other articles in this edition complement the aims of this article and could truly motivate an interest in research and drive local, regional, national and international collaborative research networks.

The prime objective of this article is to enhance the free exchange of views and ideas among RTTs in the clinical and educational institutions who are interested in promoting the research agenda in our profession. It is believed that this platform will stimulate debates on the theme that will contribute towards highlighting the strategic directions for research in Africa.

It takes time to qualify RTTs, develop research skills, build a culture of research and enter the knowledge-building fraternity. However, the future of radiation treatment is our responsibility and if we take our role to make the world a better place for all persons with cancer seriously then RTTs must respond to the research need now with sustained action and determination.

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