Strategies to promote better research on oral health in Africa: A Delphi consensus study

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Abstract

Background: Research on oral health contributes to improved health outcomes; it is an indispensable tool in health policy. But how to fill the gaps in research oral health and to strengthen its capacity is the question. The main objective of the present study is to identify the current status of oral health research and potential strategies, thereby strengthening the research infrastructure and capacity. Delphi consultation, in the perspective of assisting decision-makers to identify strategies to promote better research on oral health in Africa, was initiated. Design and Methods: The panels of 30 experts were asked to complete the questionnaire with 42 items into four groups by web survey. Each indicator statement was considered to be in consensus if the expert's opinion rating was of “A or B” for more than 75% in a scale of seven categories. Quantitative analysis was made from the answers of Delphi round. Results: There was a strong consensus about three items concerning the role of oral health research, the development of research policy for oral health going through an effective governance of research institutes, migration of researchers and fund raising. Conclusion: This study shows strong many dispersal opinions by experts, but highlights the need for to improve the effectiveness of oral health research capacity strengthening activities. Africa’s researchers, policy makers and partners will have to give special attention to ensuring that knowledge generated from oral health research is acted on to improve health for all.

Keywords: Research, oral health, strategy, Delphi survey, Africa

Introduction

Health research capacity is unanimously recognized as contributing to the overall development of low-and middle-income countries.[1] It is a critical precondition for achieving the Millennium Development Goals.[2] Resolutions and recommendations have advocated the strengthening of research. The Regional Committee for Africa adopted in 1998, the strategy for the promotion of health research in the region. The main constraints must be identified in order to cope with the high disease burden. Countries should identify priority areas of their research and capacity building in this area.[3] The Ministerial Summit of Health Research in 2004 recognized the need for health systems research that informs action and feeds into the development of health services that reach the poor and marginalized.[4] The Global Ministerial Forum on Research for Health in 2008 give emphasis to the challenges of research for development and health, the need for more health-system research and a greater intersectoral approach to science, technology and health.[5] But how African countries can develop their fragile health systems and their own capacity to do health research is rarely discussed.[6]

In oral health, the Africa Regional Strategy (1999-2008) recommends encouraging research in order to provide factual evidence on the effectiveness, cost interventions and strengthen partnerships.[7] Resolution WHA 60.17 urges member states to strengthen oral health research and use evidence-based oral health promotion and disease prevention in order to consolidate and adapt oral-health programs.[8] Therefore promotion of research in oral health, aimed at bridging gaps in research between low and middle-income and high-income countries, conduct of operational research and translation of knowledge about oral-health promotion and disease prevention into public-health action programs is essential.[9]

The question is what are the strategic directions toward which we must focus research on oral health in Africa. Including what would be its position relative to the axes of international research, how to design cooperation and organization, development and promotion. In the perspective of assisting decision-makers to identify strategies to promote better research on oral health in Africa, a Delphi consultation was implemented. The main objective is to identify the current
status of oral health research and potential strategies, thereby strengthening the research infrastructure and capacity.

**Methods**

**Methodology**

Consensus methods such as the Delphi survey technique are being employed to help enhance effective decision-making in health. The Delphi survey is a group facilitation technique, which is an iterative multistage process, designed to transform opinion into group consensus.[1] A Delphi approach of eliciting expert opinion and achieving consensus on key technical and policy issues for this study.

Methodologies available to meet the objectives of the project come within the purview of so-called consensus surveys. Investigation comprises three phases:

- Bibliographic research (Medline/PubMed) in 2011 using the keywords: Oral health, Africa, research, review to identify the current situation and produce an analysis of oral health research from the different African sub-regions.
- Methodological research to enhance and optimize the efficiency of consensus research fields applied to the topics previously identified. The key words were Delphi study, consensus, policy priorities and oral health.
- Consultation with experts in the research field through a Delphi survey.

**Identification and selection of the expert panel [Table 1]**

Academics, Chief of Department’s Dental Health, World Health Organization, Nongovernmental organizations (FDI, ARO) and academic public health were recruited to form the panel. The experts are selected for a purpose, to apply their knowledge to a problem on the basis of criteria, which are developed to our thematic under investigation. The panel of experts will focus on why and how harmonization of funder’s efforts and enhanced alignment with country needs could improve the effectiveness of funding. Participants were selected because they were recognized opinion leaders or public health decision makers and were knowledgeable about experienced in oral health. In Mars 2012, a total of 30 experts participated in consultation to structure and rate according to their importance by means of a two-round Delphi process. The process gathers opinion without the need to bring panelist together physically. The panel members were asked to complete, the questionnaire by web survey.

**Construction of the questionnaire**

A questionnaire was constructed from a content analysis of the actions indicated in the literature. The content was based on a systematic search of the relevant evidence and claims made by authors of consumer and career guides and websites.

The technical committee decided on the structure of the 1st round and based on responses and arguments from the participants, which items and questions should appear in the questionnaire. The questionnaire developed for English and French-speaking countries had 42 items, each describing the strategies for research which could be put to the panel for rating. These items covered the following broad areas: Current situation, development of research policy and implementation’s strategy, constraints of oral health research.

**Table 1: The experts to which the questionnaires were sent and their affiliations**

| Experts    | Institutions                          | Countries     |
|------------|---------------------------------------|---------------|
| Adeyemo    | University of Lagos                   | Nigeria       |
| Benzian    | Health bureau Ltd. Private sector     | United Kingdom|
| Brandt     | University of Pretoria                | South Africa  |
| China      | National Dental Association           | Benin         |
| Damle      | Maharishi Markandeshwar University    | India         |
| Danfillo   | Director Regional Centre for Oral Health | Nigeria     |
| Erasmus    | National Dental Association           | South Africa  |
| Faye       | National Oral Health Program, Ministry of Health | Senegal |
| Gandjeto   | National Coordinator, Focal Oral Health | Benin       |
| Gare       | Coordinator National Oral Health Program | Burkina Faso |
| Grossman   | University of the Witwatersrand       | South Africa  |
| Gueye      | NCD Program, Ministry of Health       | Senegal       |
| Jimongou   | National Oral Health Programme        | Togo          |
| Louazani   | Former NCD WHO/AFRO                   | Algeria       |
| Mesenge    | University of Alexandria              | Egypt         |
| Msefer     | Oral Health National Association      | Morocco       |
| Myburgh    | University of the Western Cap         | South Africa  |
| Naidoo     | University of the Western Cap         | South Africa  |
| Ndiaye     | WHO Representative                    | Cameroon      |
| Ogunbode   | Obafemi Awolowo University            | Nigeria       |
| PiliPili    | Catholic University of Louvain        | Belgium       |
| Robison    | National Center for Health Promotion-Disease Prevention | USA |
| Samba      | University of Cocody                  | Ivory Coast   |
| Savage     | University of Lagos                   | Nigeria       |
| Seeberger  | University of Caligari                 | Italy         |
| Sembene    | University Cheikh Anta Diop           | Senegal       |
| Senkoro    | Chief Dental Surge                    | Tanzania      |
| Smith      | Director Oral Health, Department of Health | South Africa |
| Tchere     | National Oral Health Program, Ministry of Health | Ivory Coast |
| Varenne    | WHO/AFRO                              | Congo         |

WHO/AFRO: World Health Organization, Regional Office for Africa
and role of universities. Response options usually used are those of a six-item (totally agree, agree, partially agree, disagree, totally disagree) format.

**Analysis**
Quantitative analysis was made from the answers of Delphi round. The technical committee determined the meaning of consensus in relation to the study aim. Statistical definition of the group response can be used to describe the degree of consensus achieved with regard to certain issues and problems. An iterative multistage process was performed to further clarify and strengthen the quality of consensus.

Seven categories characterize the level of consensus:
A: Strong agreement: More than 75% of the referees answered: “Totally agree” or “Agree”
B: Weak agreement: More than 75% of the referees answered: “Agree” or “Partially agree”
C: Scattered toward agreement: More than 75% of the referees answered: “Totally agree”, “Agree” or “Partially agree”
D: Scattered toward disagreement: More than 75% of the referees answered: “Partially agree”, “Disagree” or “totally disagree”
E: Weak scattering around partially agree: More than 75% of the referees answered: “Agree”, “Partially agree” or “Disagree”
F: Strong disagreement: More than 75% of the referees answered: “Totally disagree” or “Disagree”

Each indicator statement was considered to be in consensus if the expert’s was of “A or B” for more than 75%.

**Results**
Of the participants, 12 identified their primary area of expertise as policy, five as dental decision maker and 13 as research. During the first round, panel members were also asked to suggest any additional actions that were not covered in the original questionnaire. Responses to these open-ended questions were used to generate new items use to the second questionnaire. After an iterative multistage process was performed to further clarify and strengthen the quality of consensus. The experts reviewed and completed the questionnaire, which have sorted 42 items into four groups:
- The current situation of oral health research in 2012 is presented in Table 2.

Three levels of strong agreement (level A) were identified among 15 questions, included the role of research. Furthermore, oral health research is contributing efficiently to decision making

### Table 2: The current situation of oral health research in 2012: Distribution of the level of consensus of the panel issue from the Delphi survey

| The current situation of oral health research | Level consensus |
|---------------------------------------------|-----------------|
| Scientific research is considered as an essential element to enable the sustainable development of oral health in Africa | ✓ |
| Oral health research is contributing efficiently to decision making and to global health improvement | ✓ |
| The quality of the coordination and organization of research performed in different regions is judged to be satisfactory | ✓ |
| The credibility of the public institution’s research is overall satisfactory | ✓ |
| The current organization of the research is in agreement with the principles of ethics | ✓ |
| The countries determine their own priorities and develop their own strategies to meet the needs of their populations | ✓ |
| It is anticipated to modify the oral health research objectives and strategies with respect specific aspects of the system | ✓ |
| The themes of oral health research developed by universities are clearly identified | ✓ |
| The organization of oral health topics specific to African region is justified | ✓ |
| The quality of the research’s organization and production of the research requires that researchers clearly identify the priorities to be considered | ✓ |
| Some progress could be performed by pooling regional resources | ✓ |
| The level of production of the oral health research in Africa is similar to that to that of the general research in health | ✓ |
| The level of production and dissemination of dental research results is judged to be satisfactory | ✓ |
| Oral health research is integrated within in sanitary information systems | ✓ |
| The promotion of good practices in oral health research is judged as satisfactory | ✓ |
and to global health improvement, the current organization of
the research is in agreement with the principles of ethics and
the level of production and dissemination of dental research
results is judged as satisfactory. However five items which
showed strong dispersal of opinion.

- The main constraints of the research in oral health are
  shown in Table 3.

In answering the question as to whether improved the main
constraints on research in oral health showed a strong dispersal
opinion, but two level of strong agreement (level A) were
defined by migration of researchers and fund raising.

- The development of research policy and the implementation’s
  strategy for oral health are shown in Table 4.

For a majority of the proposed theme, the experts’ answers
ranged from disagreement. However, one level of weak
agreement (level B) was defined by an effective governance
of research institutes.

- The role of universities in oral health research
[Table 5].

There is strong dispersal of opinion to this category.

Finally, responses of experts to 86% questions are shown a
dispersal opinion.

**Discussion**

Delphi consultation is increasingly used as decision making
methods, for they have lower production cost than other
methods and provide results more rapidly.\(^{[10]}\) It is an exercise
in group communication, bringing together and synthesizing
the knowledge of a group of geographically scattered
participants who never meet.\(^{[11]}\)

**Table 3: The constraints of oral health research in 2012: Distribution of the level of consensus of the panel issue from the
Delphi survey**

| The main constraints of the research in oral health research | Level consensus |
|-------------------------------------------------------------|-----------------|
| The research constraints in the fields of global health and oral health are similar | ✓ |
| The main constraints of the research in oral health | ✓ |
| The main constraints of the research in oral health originate from | ✓ |
| Low level of national economic development | ✓ |
| Limited access and the recourse to information technologies | ✓ |
| The absence of the robust and long standing scientific culture | ✓ |
| The migration of the researchers towards the developed countries | ✓ |
| Limited access to the international scientific demonstrations | ✓ |
| Limited access to international publications | ✓ |
| The limited number of regional scientific event | ✓ |
| The limited number of regional scientific publications | ✓ |
| Fund raising is the main issue affecting the improvement of the research | ✓ |

**Table 4: The development of research policy and the implementation’s strategy for oral health in 2012: Distribution of the
level of consensus of the panel issue from the Delphi survey**

| The development of research policy and the implementation’s strategy for oral health | Level of consensus |
|-------------------------------------------------------------------------------------|--------------------|
| The development of research policy for oral health is going through | ✓ |
| An effective governance of the WHO regional office | ✓ |
| An effective governance of member states | ✓ |
| An effective regional governance universities | ✓ |
| An effective governance of research institutes | ✓ |
| The implementation’s strategy for oral health is going through | ✓ |
| An effective governance of the WHO regional office | ✓ |
| An effective governance of member states | ✓ |
| An effective regional governance universities | ✓ |
| An effective governance of research institutes | ✓ |

WHO: World Health Organization
On the current situation of research in oral health in Africa, there was strong consensus about three items concerning the role of oral health research. Africa’s health research capacity has grown considerably, with potential to increase this growth. Successful research and capacity development programs led by African researchers have now started to emerge and serve role models for others’ scientists to follow. Research for oral health oriented toward bridging the gaps in research between developed and developing countries.

Although experts consider favorably the quality level of production, there is a significant disparity in the scientific output as measured by publications. The access to the English-speaking reviews is a dominating factor in a scientific community which publishes mainly in English. Academic traditions play an important role of French speaking African researchers to publish outside their country thus African publications in the field of health are faced with a lack of international visibility. World-wide scientific publishing activity over the past decade indicates that most countries in Africa have low levels of publication. Furthermore, the access to the electronic reviews is often hindered in Africa by inconvenient power cuts, lack of computers or services of access to the internet reliable and high expenses of connection. Most African journals are owned by academic institutions, are not indexed in major databases, are poorly funded, have poor circulation and have difficulties maintaining publications schedules.

The identification of adequate funding, consensus opinion in this consultation is one of the many constraints faced by the research. Countries affect insufficient resources to health research. Globally, 10% of the budget devoted to health research is to solve the problems of 90% of the population. Furthermore one of the contributing factors is a lack of African research capacity to conduct local relevant research. In most African countries, conditions for research have been severely compromised as manifest by the generally poor remuneration, heavy teaching loads, inability to mentor young faculty and inadequate infrastructure. Investing in African institutions to improve research training capacity resulted in the retention of graduates in Africa in research positions and produced research output.

The large-scale migration of researchers working in the field of health workers to developed countries is a constraint identified mostly by experts. The latter had a negative impact on the quantity, quality and relevance of health research. Moreover a systemic way of defining, coordinating and growing the human resources for health research needed to support health systems development is missing. In recent years, concerns about the migration of skilled professionals from poor countries to rich countries put the problem of emigration of health workers at the forefront of policy makers. Other than disparate discussions on migration and curbing the brain drain, the need to capacitate health research is often neglected.

On policies and strategies for the development of the desired oral health, the opinion is shared in what concerns the proper role of institutional actors. However, there was a strong consensus that the development of research policy for oral health is going through an effective governance of research institutes. Furthermore answer’s experts indicated that interaction between policy makers and researchers is essential to influence the impact of research on oral health and health system strengthening. In many sub-Saharan African countries, there is a nonconductive environment for research: The legislative framework has not kept pace with new trends in research, such as genetics research, ethical conduct of clinical trials, material exchange and intellectual property rights. The sector of global oral health suffers from a lack of analysis, connection and insight into political contexts. Moreover to national health research fully operational not exist in many countries of the region, or appropriate policies and institutions to formulate national research programs.

There are differences of opinion as to the involvement of universities in the organization and development of
the research. It is difficult for universities to develop a coherent strategy to identify and remedy deficiencies in their doctoral training programs because there is currently no single process that can be used to evaluate all the components needed to make these programs successful. Africa’s higher education institutions that are mandated to foster this capacity lack adequate resources to generate and apply knowledge, raising the need for innovative approaches to enhance research capacity. The research environment is vital for viable academic staff recruitment and retention, particularly at the more senior levels and a number of policy options for the achievement of an improved research environment will be proposed. It should also encourage the training of research in oral health on the basis of collaborative programs between universities. Universities can make a major contribution to good policy-making by generating nationally relevant evidence, but little is known about how to strategically support universities in poorer countries to train and nurture sufficient internationally competitive researchers.

**Conclusion**

Reducing the gap in oral health research cannot take place in an isolated way but may effectively take place through work within the framework of the Global Forum for Health Research. Sub-Saharan African universities and research institutions might contemplate altering their practice of giving academic credit exclusively for publications in high-profile equal weight to publishing in national journals that have been indexed in international. Greater national and international investment in capacity building in a developing country has the greatest potential for securing dynamic and agile knowledge systems that can better health and equity now and in the future. Achieving research impact relies not only on fruitful interactions between researchers and policy makers. Moreover governments must appreciate the need to make greater commitments to provide strategic planning, legislative reforms and funding for effective management of research activities. Africa’s researchers, policy makers and partners will have to give special attention to ensuring that knowledge generated from research is acted on to improve health for all.

**References**

1. Lansang MA, Dennis R. Building capacity in health research in the developing world. Bull World Health Organ 2004;82:764-70.
2. Nuyens I. No development without research. Global Forum for Health Research. Helping Correct the 10/90 Gap, 2005. Available from: http://www.globalforumhealth.org. Accessed 15 April 2011.
3. WHO/AFRO: Strategic Health Research Plan for the WHO African Region. WHO Regional Committee for Africa Resolution AFR/RC48/R4/ Harare; 1999.
4. World Health Organization. Report from the Ministerial Summit on Health Research. Mexico City, 2004. Available from: http://www.who.int/rpc/summit/en/index7.html. Accessed 18 May 2011.
5. World Health Organization. Global Ministry forum on Research, Mali, 2008. Available from: http://www.who.int/mediacentre/events/meetings/forum_rh/en/index.html. Accessed 21 April 2011.
6. Council on Health Research for Development. A Health Research Perspective on the African Regional Health Report. Research for Health Briefing 5. Geneva: COHRED; 2007. Available from: http://www.cohred.org/briefing/cohred_briefing5_April2007.pdf. Accessed 18 May 2011.
7. World Health Organization. Regional Office for Africa: Oral Health in the African region: A Strategic Planning (1999-2008). Harare: World Health Organization Regional Office for Africa; 2000.
8. World Health Organization. World Health Assembly. Oral Health: Action Plan for Promotion and Integrated Disease Prevention WHA60.17. Geneva: WHO; 2007.
9. Petersen PE. Priorities for research for oral health in the 21st century – The approach of the WHO Global Oral Health Programme. Community Dent Health 2005;22:71-4.
10. Hasson F, Keeney S, McKenna H. Research guidelines for the Delphi survey technique. J Adv Nurs 2000;32:1008-15.
11. Adler M, Ziglio E. Gazing into the Oracle: The Delphi Method and its Application to Social Policy and Public Health. London: Jessica Kingsley Publisher; 1996. p. 257.
12. Ijsseelmuiden C, Marais DL, Becerra-Posada F, Ghannem H. Africa’s neglected area of human resources for health research-the way forward. S Afr Med J 2012;102:228-33.
13. Zumla A, Huggett J, Dhaled K, Green C, Kapata N, Mwaba P. Trials and tribulations of an African-led research and capacity development programme: The case for EDCTP investments. Trop Med Int Health 2010;15:489-94.
14. Kanoute A, Faye D, Bourgeois D. Current status of oral health research in Africa: An overview. Int Dent J 2012;62:301-7.
15. Certain E. Medical research in French-speaking Africa: Unrecognized research. Med Trop (Mars) 2003;63:627-31.
16. Horton R. North and South: Bridging the information gap. Lancet 2000;355:2231-6.
17. Forum for African Medical, editors: FAME Editorial Guidelines. World Health Organization on Behalf of the Special Programme for Research and Training in Tropical Diseases, 2004. Available from: http://www.who.int. Accessed 19 May 2011.
18. Horton R. Medical journals: Evidence of bias against the diseases of poverty. Lancet 2003;361:712-3.
19. Siegfried N, Bussegh K, Certain E. Scope and geographical distribution of African medical journals active in 2005. S Afr Med J 2006;96:533-8.
20. Global Fund for Health Research, the 10/90 Report on Health Research (2003-2004). Geneva, 2004. Available from: http://www.globalfundforhealth.org. Accessed 18 May 2011.
21. Fonn S. African PhD research capacity in public health rais d’être and how to build it global forum update on research for health. Glob Forum Health Res 2006;3:80-3.
22. Sawyerr A. African universities and the challenge of research capacity development. J HEA/RESA 2004;2:211-40.
23. Kellerman R, Klipstein-Grobusch K, Weiner R, Wayling S, Fonn S. Investing in African research training institutions creates sustainable capacity for Africa: The case of the University of the Witwatersrand School of Public Health masters programme in epidemiology and biostatistics. Health Res Policy Syst 2012;10:11.
24. Awases M, Gbany A, Nyoni J, Chatora R. Migration of Health Professionals in Six Countries: A Synthesis Report. Brazzaville: African Regional Office of the World Health Organization; 2004.
25. Stilwell B, Diallo K, Zurn P, Dal Poz MR, Adams O, Buchan J. Developing evidence-based ethical policies on the migration of health workers: Conceptual and practical challenges. Hum Resour Health 2003;1:8.
26. Ghaffaar A, Ijsseelmuiden C, Zicker E. Changing Mindset: Research Capacity Strengthening in Low-and-Middle-Income Countries. Geneva: COHRED, Global Forum for Health Research and
27. Whitworth JA, Kokwaro G, Kinyanjui S, Snewin VA, Tanner M, Walport M, et al. Strengthening capacity for health research in Africa. Lancet 2008;372:1590-3.
28. Benzian H, Hobdell M, Holmgren C, Yee R, Monse B, Barnard JT, et al. Political priority of global oral health: An analysis of reasons for international neglect. Int Dent J 2011;61:124-30.
29. Pang T, Sadana R, Hanney S, Bhutta ZA, Hyder AA, Simon J. Knowledge for better health: A conceptual framework and foundation for health research systems. Bull World Health Organ 2003;81:815-20.
30. Bates I, Phillips R, Martin-Peprah R, Kibiki G, Gaye O, Phiri K, et al. Assessing and strengthening African universities’ capacity for doctoral programmes. PLoS Med 2011;8:e1001068.
31. Kabiru CW, Izugbara CO, Wambugu SW, Ezeh AC. Capacity development for health research in Africa: Experiences managing the African Doctoral Dissertation Research Fellowship Program. Health Res Policy Syst 2010;8:21.
32. Blair R, Jordan J. Retaining Teaching Capacity in African Universities: Problems and Prospects. Washington DC: World Bank; 1995. Available from: http://www.openknowledge.worldbank.org/handle/10986:9964. Accessed 14 April 2011.
33. World Health Organization. The World Oral Health Report 2003. Continuous Improvement of Oral Health in the 21st Century – The Approach of the WHO Global Oral Health Programme. Geneva: WHO; 2003.
34. Petersen PE. Global policy for improvement of oral health in the 21st century – Implications to oral health research of World Health Assembly 2007, World Health Organization. Community Dent Oral Epidemiol 2009;37:1-8.
35. Hofman KJ, Kanyengo CW, Rapp BA, Kotzin S. Mapping the health research landscape in Sub-Saharan Africa: A study of trends in biomedical publications. J Med Libr Assoc 2009;97:41-4.
36. Ezeh AC, Izugbara CO, Kabiru CW, Fonn S, Kahn K, Manderson L, et al. Building capacity for public and population health research in Africa: The consortium for advanced research training in Africa (CARTA) model. Glob Health Action 2010;3:5693.
37. Matthys B, Murugi J, de Haan S, Mäusezahl D, Wyss K. COHRED Record Paper 9. Research for health and health system strengthening in Africa. Results of a stakeholder consultation. Swiss Centre for International Health (SCIH): Council on Health Research for Development (COHRED); 2009. p. 1-20.
38. Volmink J, Dare L. Addressing inequalities in research capacity in Africa. BMJ 2005;331:705-6.

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