

## Review Article

## RESEARCH COLLABORATION IN MEDICINE

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## Abstract

**Background:** Collaboration is necessary for medical practice including research. Research collaboration is important to give credibility to research and it allows the same research to be conducted in different settings and countries. Collaboration in research is beneficial as funding and grants application can be easier.

**Method:** This is a review article on research collaboration in medicine. A literature search of articles on medical research collaboration was done using Google Scholar, Medline and PubMed.

**Conclusion:** There are various forms of research collaboration with several advantages and also challenges. One of the major challenges of research collaboration is conflict in authorship. Trust and good communication form part of the ingredients for a successful research collaboration. A well-selected and well-resourced team of research collaborators, in which authorship is based on substantial contribution and authors arranged according to the extent of their contributions rather than by sentiment is recommended. The leader of such a collaboration should have leadership skills.

**Keywords:** Research, Collaboration, Partnership, Conflict of Authorship.

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## OVERVIEW OF RESEARCH COLLABORATION

Research is integral to medicine as medicine is not static. Discoveries and inventions are made almost daily, hence physicians need to be involved in research. Research can be done solely by an individual or with other physicians leading to research collaboration. Research collaboration can be defined as researchers from the same institution or different disciplines and even countries coming together to carry out research. Globally, research collaboration is increasing as it brings researchers together to conduct research.<sup>1,2</sup> Collaboration in research is now recognized as an important facet in research especially as it is necessary for studying and solving complex problems.<sup>3,4</sup> In medicine, research promotes the advancement of innovation and knowledge,<sup>5</sup> thus research collaboration is a fundamental necessity because it is a platform for the exchange of ideas and skills, and it also helps access to funding.<sup>6,7</sup>

The participants in the collaboration may be from different institutions or nationalities.<sup>6,8,9</sup> Collaboration in research is also referred to as research partnership. This phenomenon is used to describe when more than one person or group are involved in a research project irrespective of their disciplines or background.<sup>4,10</sup> That means these physicians work in synergy intending to add to the existing body of knowledge.<sup>11</sup> Research collaborations or partnerships should be encouraged as it has birthed several initiatives and relationships, some of which continued even after the project that brought the various collaborators together has ended.<sup>11</sup> In medicine, the quality of health and healthcare is improved following the implementation of research findings.<sup>4</sup> Maintaining collaboration is not an easy task as several measures and strategies must be taken to ensure the overall goal of the team is achieved despite the challenges of research collaboration.<sup>12</sup> Several social relations are required and

everyone in the collaboration should be assigned specific roles.<sup>4</sup>

In research and clinical practice, collaboration is a term that is commonly used and it can occur at any level of training or the organizational structure of the health system.<sup>13</sup> The collaborators listen and learn from each other.<sup>13</sup> Medical science is enhanced by research collaborations,<sup>14</sup> hence it should be promoted.<sup>7</sup> The promotion of collaboration in research also involves a balance of power equality among the partners in the collaboration.<sup>7</sup>

In a study conducted by the British Academy, Royal Academy of Engineering and the Academy of Medical Science in 2017, 1286 fellows and recipients of grants were surveyed, 89% of the research participants said that collaboration in research had a positive impact on their career.<sup>14</sup> It shows that research collaboration is important. Following the establishment of a research partnership, strategies have to be taken for the maintenance of interest and enthusiasm in the network to achieve the desired goal.<sup>5</sup> Specific demands are required from each collaborator in the partnership.<sup>15</sup> Depending on the relationship established by the collaborators during the period of the research collaboration, communication amongst the collaborators may continue after the completion of the project that brought them together.<sup>13</sup>

In the establishment of research collaboration, strategies should be taken at the beginning to prevent any sources of conflict. Some of the strategies that can be taken early in the collaboration business to prevent conflict from arising are:<sup>4,13</sup>

1. Having a plan and choosing a research topic that can be carried out within the stipulated time available for the collaboration.
2. Identifying people who are enthusiastic to be members of the research collaboration who at the commencement of the project are ready to work without any source of funding.
3. Setting roles and expectations at the commencement of the collaboration.
4. Having regular communication

The process of research collaboration involves planning, implementation and dissemination of the results of the research.<sup>12</sup> Planning may require consulting published literature on the topic before the commencement of the project.<sup>13,16</sup> Researchers in high-income and low- and middle-income countries (LMICs) may collaborate to conduct studies that lead to the improvement of health and healthcare through high-quality research.<sup>17</sup>

## TYPES OF RESEARCH COLLABORATION

Research collaborations can be formal or informal.<sup>18-21</sup>

**Formal Research Collaboration:** Formal research collaboration is a partnership in which people are brought together under an organized umbrella, for instance a professional association. A member of a medical professional association or institution can be co-opted into a research collaboration because of their membership in the association. An example of a formal research collaboration is the Tehran University of Medical Sciences research collaboration<sup>22</sup>.

**Informal Research Collaboration:** This occurs when a group of people informally decide to conduct research. Members of an informal research collaboration may have known themselves by a mere acquaintance, by being colleagues or by meeting at a conference. They can also be members of other research collaborations.

Collaboration in research can also be classified as voluntary, consortia, federation, affiliation or merger.<sup>1</sup>

**Voluntary Research Collaboration:** This occurs when the collaborators willingly and voluntarily decide to join a research collaboration. An example is the Research Collaboration Network of the Nigerian Association of Resident Doctors (NARD). The Research Collaboration Network of NARD is a collaboration of researchers whose members are drawn from resident doctors who are members of the Nigerian Association of Resident Doctors.<sup>23-25</sup>

**Consortia Research Collaboration:** A research consortium is a form of collaboration in which various medical research groups come together to address a particular problem. The institutions can be within a country or from different countries. An example of this type of research collaboration is the Rheumatoid Arthritis MRC-ABPI (RA-MAP) Consortium.<sup>26</sup>

**Affiliation Research Collaboration:** This occurs when members of the research collaboration are there due to their institutional affiliation.

Research collaboration also occurs at different levels; these are Interdisciplinary, Multi-disciplinary, Intra-disciplinary, Trans-disciplinary, National and International.<sup>1,27-31</sup>

**Interdisciplinary:** This occurs when the research collaboration is made up of collaborators from different medical disciplines and specialties.<sup>32-35</sup> This may be physicians of different medical and dental specialties, it can also be made up of different categories of healthcare workers who decide to conduct the research such as doctors, pharmacists, physiotherapists, laboratory scientists and nurses.

**Multidisciplinary:** This occurs when the collaboration comprises medical researchers of different medical specialties.<sup>36,37</sup> In this type of collaboration, each member of the research team uses their expertise to solve the problem before coming together as a team. The difference between interdisciplinary and multidisciplinary research collaboration is that in the multidisciplinary, the different teams that make up the research collaboration conduct their research individually and then come up with different results with other members of the research collaboration. While in interdisciplinary research collaboration, an attempt is made from the beginning of the collaboration to attempt to research to solve the research question.

**Intra-Disciplinary:** This occurs when physicians of the same medical discipline, department and specialty form the collaboration.<sup>38</sup>

**Trans-disciplinary:** This is similar to the multi-disciplinary research collaboration as the research collaboration is made of research teams from different institutions. In this type of research collaboration, the collaborators are made up of teams of different medical and dental specialties.<sup>39-42</sup>

**National and International Research Collaboration:** National research collaboration occurs where the

collaborators reside and work in different parts of a country. In international research collaboration, the collaborators reside in different countries. International research collaboration is now common globally, therefore, receiving attention from policy makers.<sup>14</sup> In such teams, different cultural and methodological perspectives and approaches are brought by the collaborators, therefore widening the analysis and interpretation in providing a solution to the research problem.<sup>6,17</sup>

## BENEFITS OF RESEARCH COLLABORATION

There are several benefits of research collaboration.

- a. Exchange of Ideas and Knowledge;  
Research collaboration leads to the exchange of ideas and knowledge among the collaborators of the team. This is because everyone brings their expertise to the collaboration. As a result, intellectual companionship and partnership occur.<sup>1-4,7,14,17</sup> This knowledge sharing makes tackling the research problems easier.
- b. Reduced Research Expense Per Collaborator;  
In research collaboration the expense on research per collaborator is reduced as the cost of the research will be shared amongst the collaborators instead of the cost borne only by one researcher.<sup>3,12,13,14,17</sup>
- c. Improved professionalism.<sup>12-14</sup>
- d. Access to international funds and grants since most research funding bodies will not want to give their money to individuals.<sup>10,16,17,43</sup>
- e. Research collaboration achieves a greater impact of the research results, especially when it is an international collaboration.<sup>9,15</sup>
- f. Better access to equipment and research.<sup>9</sup>
- g. Research collaboration is necessary for addressing complex research questions.<sup>3</sup>

## CHALLENGES OF RESEARCH COLLABORATION

Research collaboration has several advantages and also some ugly aspects.<sup>44</sup> Factors that foster good research collaboration include trust,<sup>10,13,45</sup> respect for others in the collaboration,<sup>10,13</sup> good communication,<sup>4,10,14,45</sup> and accountability.

Some of the challenges of research collaboration are:

1. **Conflict in Authorship:** Authorship is an important source of conflict in research collaboration.<sup>46-48</sup> The criteria for authorship should be outlined from the beginning of the collaboration process before the commencement of the research project. Meaningful and sustainable contribution to the study should be made a criterion for authorship.<sup>12</sup> The order of names of the authors is very important because this can bring the research collaboration to a halt and there will be conflict.<sup>4</sup> If authorship was not determined at the beginning there may be problems in the future.
2. **Group and Power Dynamics:** Group and power dynamics is a challenge in research collaboration.<sup>44</sup> This is because several dynamics can play out due to differences in character, personality, research interests and how people relate to other people. For example, a collaborator may invite friends and colleagues to join the collaboration without informing other members and can lead to conflict. Power dynamics can occur when there is favouritism by the leader of the collaboration on who is active while sidelining others.<sup>49-51</sup> A leader of a collaboration would require leadership skills and should not exhibit any form of bias.
3. **Guest and Ghost Authorship:** Guest and ghost authorship is a demerit of research collaboration.<sup>2,52-54</sup> Ghost authors are those who made a substantial contribution to the research but their names are not listed in the publication,<sup>55</sup> while guest authors are those who did not contribute to the publication but are listed as authors.<sup>2,56</sup> This can cause serious conflict in the collaboration as no one who made a meaningful contribution to research will like their name missed out and be quiet about it.<sup>56</sup> The criteria for authorship should be authors that make a significant contribution<sup>57,58</sup> and not by sentiments.

## CONCLUSION

Collaboration in research is very important in the advancement of healthcare and improvement of medical knowledge. There are several types of research

collaboration and there are several benefits. Collaboration in research is not devoid of challenges despite its benefits. One of the major challenges of research collaboration is conflict in authorship. Trust and good communication form part of the ingredients for a successful research collaboration. A well-selected and well-resourced team of research collaborators, in which authorship is based on substantial contribution and authors arranged according to the extent of their contributions rather than by sentiment is recommended. The leader of such a collaboration should have leadership skills.

## Conflict of Interest

The author declared that there are no conflicts of interest

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