



# The Global Andrology Forum (GAF): A World-Wide, Innovative, Online Initiative to Bridge the Gaps in Research and Clinical Practice of Male Infertility and Sexual Health

Ashok Agarwal<sup>1</sup>, Ramadan Saleh<sup>2,3</sup>, Florence Boitrelle<sup>4,5</sup>, Rossella Cannarella<sup>6</sup>,  
Taha Abo-Elmagd Abdel-Meguid Hamoda<sup>7,8</sup>, Damayanthi Durairajanayagam<sup>9</sup>, Ahmed M. Harraz<sup>10,11,12</sup>,  
Rupin Shah<sup>13</sup>

<sup>1</sup>American Center for Reproductive Medicine, Global Andrology Forum, Moreland Hills, OH, USA, <sup>2</sup>Department of Dermatology, Venereology and Andrology, Faculty of Medicine, Sohag University, Sohag, Egypt, <sup>3</sup>Ajyal IVF Center, Ajyal Hospital, Sohag, Egypt, <sup>4</sup>Reproductive Biology, Fertility Preservation, Andrology, CECOS, Poissy Hospital, Poissy, France, <sup>5</sup>Department of Biology, Reproduction, Epigenetics, Environment and Development, Paris Saclay University, UVSQ, INRAE, BREED, Jouy-en-Josas, France, <sup>6</sup>Department of Clinical and Experimental Medicine, University of Catania, Catania, Italy, <sup>7</sup>Department of Urology, King Abdulaziz University, Jeddah, Saudi Arabia, <sup>8</sup>Department of Urology, Faculty of Medicine, Minia University, Minia, Egypt, <sup>9</sup>Department of Physiology, Faculty of Medicine, Universiti Teknologi MARA, Sungai Buloh Campus, Selangor, Malaysia, <sup>10</sup>Mansoura University Urology and Nephrology Center, Mansoura University, Mansoura, Egypt, <sup>11</sup>Department of Surgery, Urology Unit, Farwaniya Hospital, Farwaniya, Kuwait, <sup>12</sup>Sabah Al Ahmad Urology Center, Kuwait City, Kuwait, <sup>13</sup>Division of Andrology, Department of Urology, Lilavati Hospital and Research Centre, Mumbai, India

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## INTRODUCTION

The history of male reproductive and sexual health management dates to ancient human civilizations. Aristotle (384–322 BC) was the earliest to make impressive observations on semen characteristics. He also hypothesized the origin of semen and the cause and diagnosis of sterility in “The Generation of Animals” [1]. Andrology has since developed over many centuries, with gradual progression interspersed with seemingly lengthy periods of regressions [2]. Modern andrology was recognized as a clinical entity only much later in the mid-20th century when specialists from different

backgrounds were united by a shared interest in male reproductive function. Presently, urologists and endocrinologists, along with biologists, geneticists, sexologists, and psychologists make up the members of various national and international andrology societies [1].

Male infertility is a worldwide problem that poses a tremendous burden on various societies. According to the World Health Organization (WHO), around 190 million people worldwide suffer from infertility, and there is an increasing number of couples requesting medical reproductive assistance [3]. A male factor contributes to couple infertility in about 50% of cases [4]. However, dramatically, despite a careful diagnostic

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Correspondence to: Ashok Agarwal <https://orcid.org/0000-0003-0585-1026>

American Center for Reproductive Medicine, Global Andrology Forum, 130 West Juniper Lane, Moreland Hills, OH 44022, USA.

Tel: +1-216-312-5829, E-mail: [agarwaa32099@outlook.com](mailto:agarwaa32099@outlook.com), Website: <https://www.globalandrologyforum.com>

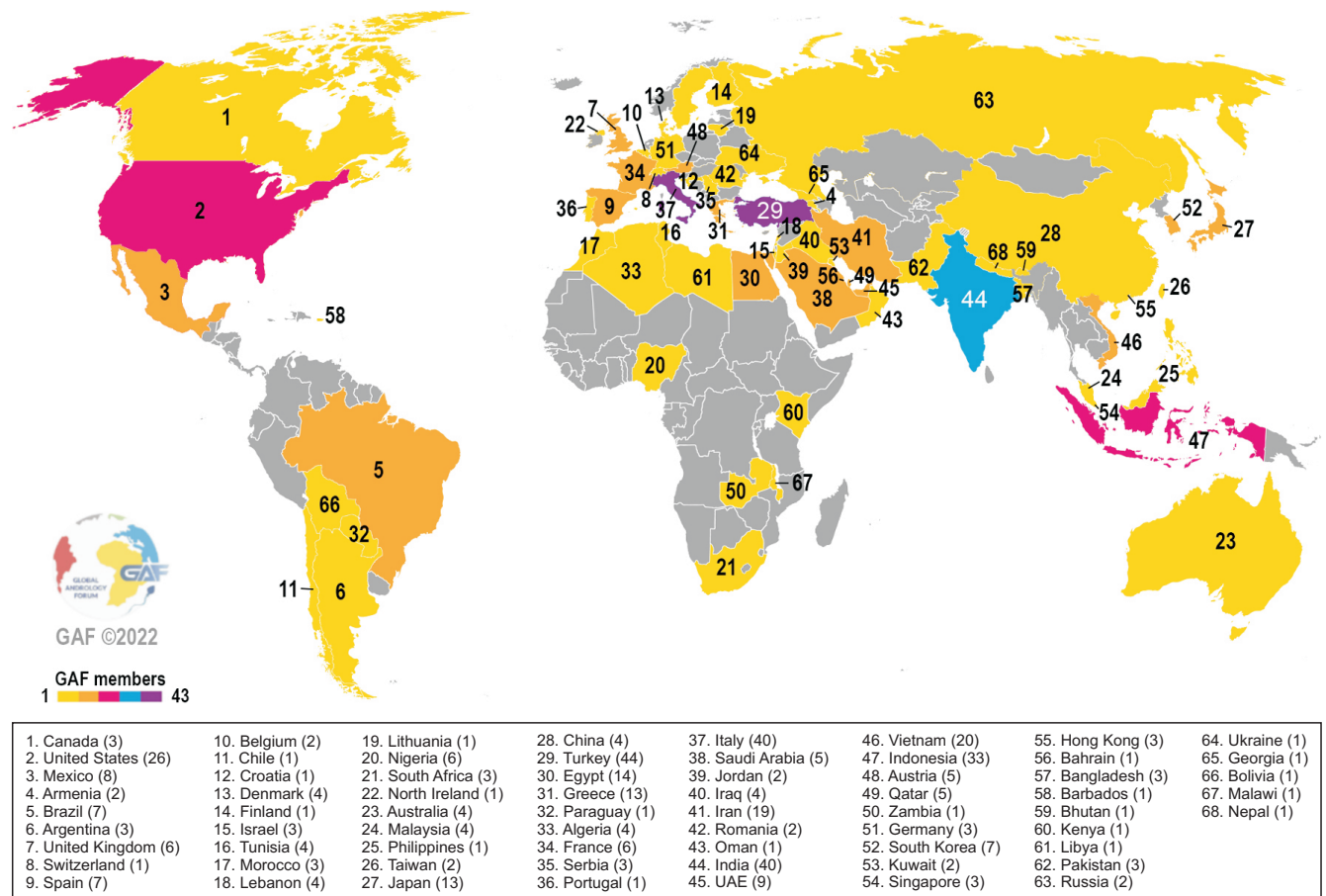
work-up, the etiology of male infertility remains undiagnosed in up to 50% of patients, who are hence classified as having idiopathic male infertility [5]. Moreover, there remain several issues concerning known conditions such as varicocele, sperm DNA fragmentation, and non-obstructive azoospermia that need answers. The reasons for these uncertainties may lie, at least in part, in the development of assisted reproductive technology (ART), which has led to bypassing treating the root causes of male infertility [6], thereby impeding the development of high-quality research on male infertility. This in turn has affected the development of robust clinical practice guidelines for male infertility management by professional societies.

In this context and with the growing use of online communication and teaching tools, researchers in andrology from across the world have come together to create the Global Andrology Forum (GAF). The aim of this article, is to present the evolution of the GAF: a unique, online worldwide collaborative project for high-

quality andrological research.

### 1. GAF evolution and development

The American Center for Reproductive Medicine (ACRM) is an internationally recognized andrology center, which conducts annual, in-person training courses in andrology and ART. In response to the COVID-19 pandemic, the ACRM transitioned its 2020 annual training in ART from hands-on, laboratory-based training to a fully online training course endorsed by the American College of Embryology (EMBCOL) [7,8]. The COVID-19 pandemic revolutionized the fields of research and training by prompting researchers to effectively utilize online tools for virtual training of many researchers simultaneously [9-11]. Consequently, an online 6-week ACRM mentorship program was developed focusing on the five core pillars of andrology research: scientific writing, scientific methodology, plagiarism understanding, soft skills development, and basic andrology knowledge. This andrology education and



**Fig. 1.** Geographical distribution of Global Andrology Forum members. The number of members is shown in brackets after the name of each country. The darker color indicates the countries with the highest number of participants. The lighter color indicates the ones with the fewest number of participants.

research programs was well-received by hundreds of participants from around the world [7,8] and from this successful online teaching model, the idea was born to create an independent worldwide online research group in andrology, the GAF.

The GAF began informally in May 2020 as a limited international online working group collaborating for andrological research and was subsequently formalized as the GAF in December 2021. The GAF includes 433 participants from 68 countries and 6 continents (as of Aug 1, 2022) (Fig. 1), with academic and clinical interests in male reproductive and sexual health. These include andrologists, urologists, uro-andrologists, gynecologists, embryologists, reproductive endocrinologists, and biomedical researchers. The GAF management team (GAF-MT) utilizes WhatsApp groups to facilitate and enhance communications between GAF members across different time zones. GAF has a website (<https://www.globalandrologyforum.com>), with information on various andrological subjects, archives of previous educational activities, and a “Members Corner”, where members can discuss new ideas, share novel findings, and raise clinical queries.

## 2. GAF vision statement

The GAF's vision is to create a global collaboration of clinicians and researchers to promote scientific excellence in andrology. GAF aspires to reshape the future of andrology by bringing together the most passionate, talented, experienced, committed, and hard-working researchers and clinicians globally.

## 3. GAF mission statement

The GAF's goal is to conduct the highest quality research in the field, including new systematic reviews and meta-analyses, scientometric studies, and global surveys on andrology clinical practice, and to write cutting-edge articles on the future of male infertility and sexual medicine. GAF research studies integrate basic science and clinical practice, thus bridging the gap between researchers and clinicians. GAF also promotes educational and academic activities, including scientific meetings, tutorials, online tests, and comprehensive training in research methodology. Additionally, GAF works to provide the best available research and clinical evidence to enhance evidence-based practice in male reproductive and sexual health care, while maintaining a global perspective on health care availability

and taking into consideration the diverse beliefs, value systems, and preferences of the patients.

## 4. GAF management team

The GAF-MT (<https://www.globalandrologyforum.com/meet-the-management-team>) includes a panel of experts in andrology and reproductive medicine. The GAF-MT identifies important scientific questions, proposes, discusses, and arrives at a consensus on the research subject matter, manages and conducts the research and surveys, and finally synthesizes GAF's research activities into scientific articles. Members of the GAF-MT communicate on a day-to-day basis and voluntarily invest an average of 1 to 2 hours per day on GAF-related work. GAF's online format enables GAF-MT members from four different continents (North America, Europe, Africa, and Asia) and time zones, to successfully manage and guide the GAF activities.

## 5. GAF membership

The GAF provides an inclusive culture of research that acknowledges the value and power of active and continuous collaboration. To that effect, GAF invites highly motivated clinicians and researchers with a special interest in andrology to join its activities. A certain level of dedication and commitment is expected from all candidates interested to join the GAF. GAF members are required to actively participate in designing studies, data collection, data analysis as well as manuscript drafting, editing, and reviewing. Another requirement for all GAF members is to contribute ideas for new research projects. These ideas are then categorized and selected based on the topic and relevance and preserved in the GAF Research Project Bank, forming a repository for potential future projects. In addition, GAF members are required to attend research meetings, participate in ongoing research projects and provide constructive feedback on academic activities organized by GAF, and commit to maintaining strict confidentiality of ideas and concepts being developed by GAF.

## 6. Benefits of GAF membership

Members of GAF are exposed to innovative concepts and new ideas from all over the globe. They have the opportunity to participate in high-quality systematic reviews, meta-analyses, scientific articles, book chapters, and online meetings. They receive training in var-

ious aspects of research, such as study design, research methodology, literature search, and scientific writing. Members can also benefit from using the tools available on the GAF website. Thus, GAF offers a wealth of ideas, concepts, and methodological tools, sharing of questions and answers, and bibliographic references to its members. As an added bonus, the GAF membership is completely free of charge.

## 7. How to join the GAF?

Researchers who wish to join the GAF as an active member are required to confirm their intention by completing a short survey: <https://www.globalandrologyforum.com/welcome-a-member>. Upon completion, they are asked to submit a recent curriculum vitae to the attention of GAF-MT. Candidates who fulfill the basic criteria for inclusion can be assigned the role of “Active Researcher”, who will be actively involved in the phases of ongoing research projects, or as “Clinical Adviser”, who will provide their suggestions during ongoing and future projects. Candidates selected as Active Researchers will be interviewed and directed to a short training course focused on research methodology. Additional training is also offered on meta-analytic projects such as the use of advanced search on the Scopus database, evaluation of article eligibility based on a specific Population Intervention Outcome Comparison (PICO) question, and quality of evidence (QoE) assessment of articles using the Cambridge Quality Checklist for observational studies [12], the Cochrane Risk of Bias [13], Jadad score [14], and CONSORT guidelines [15] for randomized controlled trials (RCTs). Furthermore, they are also trained in the extraction of data used to perform a meta-analysis. Candidates who successfully complete the exercises are directed to join one of the GAF projects.

## 8. GAF activities

Since its inception, GAF has been engaged in conducting various activities and projects as described below.

### 1) Training of GAF members in scientific research

GAF has organized several training courses on various research tools (performing database searches using PubMed and Scopus, assessment of the QoE of published articles, extraction of data, principles of statisti-

cal analysis, critical review of articles and scientific writing); this is being done with the specific aim of providing researchers and clinicians worldwide with the resources necessary to achieve scientific excellence in andrology. These courses were conducted by a panel of experts in andrology and reproductive medicine while taking the researchers' background, experience, and needs into account.

### 2) Educational webinars and hybrid scientific meetings

GAF has planned a series of educational webinars on “The Future Advances in Andrology” targeted toward reproductive physicians and professionals. Free online registration is available for all participants from anywhere in the world. The webinar speakers, chairpersons, and moderators are selected from GAF members. All lecture material for these webinars is subjected to extensive internal review by a panel of GAF experts prior to the event. The first hybrid meeting for 2022 was held in Lugano, Switzerland on April 7–8 in collaboration with the ACRM and the members of the European Academy of Andrology. The second was held on April 11 in Catania, Italy in collaboration with the University of Catania. The third was held on May 19 in Mexico City, Mexico in collaboration with the Mexican Academy of Embryology and Andrology (MAEA), EMBCOL, and ACRM. A fourth hybrid meeting is scheduled for September 30 in Turkey in collaboration with the Society of Urological Surgery, Andrology Working Group and ACRM. Topics for upcoming webinars include: (1) epidemiology and preventative andrology/men's health, (2) advances in the management of male infertility, (3) research advances in male infertility, (4) varicocele update, (5) advances in sexual medicine, and (6) the future of male contraception.

### 3) Conducting research projects online and publishing its findings

GAF has published 14 studies to date with another 9 papers currently in various stages of completion or submission (see Supplement Table 1, 2). These studies exemplify a workable model of international digital collaboration on a research topic. For example, in the study titled “*Consensus and diversity in the management of varicocele for male infertility: Results of a global practice survey and comparison with guidelines and recommendations*” [16], we explored the global

practice patterns on the management of varicocele in the context of male infertility through an online questionnaire that was answered by 574 clinicians from 59 countries. This study is by far the largest global survey performed to date on the clinical management of varicocele for male infertility. The resulting manuscript represents the culmination of over nine months of continuous work involving 183 authors from 40 countries and six continents. Other research projects have been submitted as abstracts to the upcoming 2022 Scientific Congress of the American Society for Reproductive Medicine (ASRM) (see Supplement Table 3).

#### 4) Contributing to and editing books on male infertility

GAF members who are internationally recognized scientists and clinicians with a special interest in the subject are presently engaged in the writing and editing of several books with international publishers. These books integrate basic science and clinical applications when discussing the current challenges and future perspectives of male infertility and addressing clinical dilemmas and controversies surrounding the management of male infertility.

## CONCLUSIONS

The GAF is a new initiative to bring together clinicians and researchers, seniors and juniors, from around the globe, through an online collaborative model, to promote the highest level of research to overcome current challenges in male reproductive and sexual health. Through its training programs, GAF aims to create a new generation of well-trained, dedicated, clinical researchers. Furthermore, through its research projects that bring together the expertise of a large group of senior clinicians and researchers from around the globe, GAF endeavors to refine the management of male infertility and sexual problems and reshape the future of andrology.

### Conflict of Interest

The authors have nothing to disclose.

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## Author Contribution

Conceptualization: AA, RSh, RSa. Methodology: TAAH, FB, DD. Project administration: AA. Supervision: RSh. Validation: RC. Visualization: TAAH. Writing – original draft: All authors. Writing – review & editing & final approval: All authors.

## Supplementary Materials

Supplementary materials can be found *via* <https://doi.org/10.5534/wjmh.220127>.

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