Qualitative Research in Male Infertility

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KEYWORDS

• Male infertility • Qualitative research • Health services

KEY POINTS

- Clinical and basic science research are limited in their ability to address the multifactorial challenges involved in the access and utilization of health care services for male factor infertility.
- Qualitative research produces descriptive data that the researcher must then interpret using rigorous and systematic methods of transcribing, coding, and analysis of trends and themes.
- Robustness and research integrity are just as important in qualitative research as in other forms of research and are assessed by specific criteria, including trustworthiness, credibility, applicability, and consistency.

INTRODUCTION

A diagnosis of male factor infertility has a tremendous impact on the physical and emotional health and quality of life of affected couples.[1,2] Despite this, the male partner is often overlooked in the evaluation and treatment of a couple's infertility.[3] In fact, male infertility is underrepresented as a disease, both scientifically and socially. Several barriers to access to care for male infertility have been described.[4] Foremost among these is a lack of scientific data and literature that define the scope of the male infertility problem. Health care providers and the general public, alike, have misperceptions about the prevalence, severity, and impact of male factor infertility, which compromises the quality of care for affected couples, as well as the health and reproductive outcomes stemming from treatment.

Discoveries resulting from clinical and basic science research have led to numerous advances in male reproductive health, ranging from enhanced understanding of the genetic basis of male factor infertility, to optimal management of hypogonadal men, and the development of surgical techniques for surgical sperm extraction in the setting of nonobstructive azoospermia. Indeed, such advances have made paternity possible for a substantial proportion of men previously considered infertile and tremendously improved quality of life for affected couples.

However, clinical and basic science research are limited in their ability to address the multifactorial challenges involved in the access and utilization of health care services for male factor infertility. The inability to recruit patients to participate in a randomized controlled trial comparing varicocelectomy to intrauterine insemination is a humbling reminder of the limitations of quantitative research alone.[5] Complementary approaches, such as qualitative research, mixed methods research, and/or health services research, can be helpful in identifying barriers in access to male infertility care, improving the delivery and quality of care for male factor infertility, and improve patient satisfaction.

This article explores the role of qualitative research in male infertility, including current and future applications.

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Urol Clin N Am 47 (2020) 205–210
https://doi.org/10.1016/j.ucl.2019.12.007

QUANTITATIVE VERSUS QUALITATIVE RESEARCH

Quantitative research uses numerical data to identify large-scale trends and statistical operations to determine causal and correlative relationships between variables. In contrast, qualitative research is a scientific method of observation to gather nonnumerical data in order to understand individuals' beliefs, experiences, attitudes, behavior, and interactions. Qualitative research produces descriptive data that the researcher must then interpret using rigorous and systematic methods of transcribing, coding, and analysis of trends and themes.

As such, qualitative research is ideally suited for investigating how or why a certain phenomenon occurs, rather than how often. This approach lends itself well to creating new theories using the inductive method, which can then be tested with further research. When used together, the combination of qualitative and quantitative research has the potential to more comprehensively evaluate and address a research problem, compared with either approach alone.[6]

QUALITATIVE RESEARCH METHODOLOGY

Five different qualitative research methods have been described, with Grounded Theory, Ethnography, and Phenomenology being the most common approaches (Table 1).[7] Data collection involves direct observations, interviews, and examination of existing documents and may be completed via individual interactions, focus groups, structured or open-ended surveys, or some combination of these techniques, depending on the study question.[8] For example, the researcher may use "small-group discussions" for investigating beliefs, attitudes, and concepts of normative behavior; "semi-structured interviews" to seek views on a focused topic or an institutional perspective; "in-depth interviews" to understand a condition, experience, or event from a personal perspective; and "analysis of texts and documents," such as government reports, media articles, Web sites or diaries, to learn about distributed or private knowledge.[9]

QUALITATIVE DATA ANALYSIS

Qualitative research yields mainly unstructured, text-based data and may include a variety of

Table 1
Qualitative research methods

Method	Description	Sample Size	Data Collection
Ethnography	Researchers immerse themselves in the study environment as "participant observers" to gain an in-depth understanding of the environment from the study participants' point of view	—	Observation and interviews
Narrative	Researchers weave together a sequence of events or experiences, as related by one or more participants, to form a cohesive story or narrative	1–2	Stories from individuals, and documents
Phenomenologic	Researchers attempt to understand participants' experience of an event or activity as well as the meaning participants ascribe to that event	5–25	Interviews, then thematic analysis
Grounded theory	Researchers explore the explanation or theory behind an event, based on the study data	20–60	Interviews, then open and axial coding
Case study	Researchers seek a detailed understanding of an event by examining multiple data sources	—	Interviews, documents, reports, observations

multimedia materials. Data analysis is the part of qualitative research that most distinctively differentiates it from quantitative research methods. It is not a technical exercise as in quantitative methods, but more of a dynamic, intuitive, and creative process of inductive reasoning, thinking, and theorizing (**Table 2**). Analyzing qualitative data predominantly involves coding or categorizing the data in order to identify significant patterns or recurrent themes or topics, which may be of interest to the researcher.[10]

JUDGING QUALITATIVE RESEARCH

Research integrity and robustness are as important in qualitative studies as in other forms of research. It is widely accepted that qualitative research should be ethical, important, and intelligibly described and use appropriate and rigorous methods.[11] That said, the criteria used to evaluate quantitative research, such as reproducibility, reliability, and validity, are not applicable when it comes to qualitative research. There are separate criteria for assessing qualitative research, which include trustworthiness, credibility, applicability, and consistency.[12,13]

Trustworthiness refers to robustness of the procedural description, that is, the purpose of the research, how it was conducted, procedural decisions, and details of data generation and management. A qualitative study is considered credible when its results are recognizable to people who share the experience and those who care for or treat them. Qualitative researchers use techniques such as reflexivity (reflection on the influence of the researcher on the research), triangulation (answering the research question in more than 1 way), and substantial descriptions of the interpretations process, including verbatim quotations from the data, to add to the credibility of the study. Applicability refers to transferability of the research findings. A study is considered to meet the criterion of applicability when its findings can fit into contexts outside of the study situation and when clinicians and researchers view the findings as meaningful and applicable in their own experiences. Importantly, although credibility refers to the internal validity of a study, applicability refers to the external validity. Last, consistency is a measure of reliability and implies that, given the same data, other research would find similar patterns and draw similar conclusions.

STRENGTHS AND LIMITATIONS

Although once viewed as philosophically incongruent with experimental research, qualitative research is now recognized for its ability to add a new dimension to research studies that cannot be obtained through measurement of variables alone. Qualitative research offers distinct advantages over quantitative research methodologies, particularly in the setting of complex questions (**Box 1**).[8] A qualitative approach also allows the opportunity to perform exploratory research in an area where there is limited or no preexisting data, in order to provide structure and preliminary data for developing a more detailed research question. However, it should also be mentioned that qualitative research is subject to some inherent limitations. First and foremost is the potential for the mere presence of the researcher to influence the subjects' responses. The researcher's ability and training in qualitative research methodologies can further affect the quality of the work. Last, qualitative data analysis and summary can be time consuming, often requiring a second analyst to ensure consistency.[8]

APPLICATIONS TO MALE INFERTILITY

The cause of male infertility is multifactorial. Utilization of services for the diagnosis and treatment

Table 2
Overview of qualitative data preparation and analysis

Step 1: Become familiar with the data	Transcribe the data, if applicable. Read and review the data several times in order to become familiar with it. Start looking for basic observations and patterns.
Step 2: Revisit research objectives	Revisit the research objective and identify the questions that can be answered through the collected data.
Step 3: Develop a framework	Identify broad ideas, concepts, behaviors, and assign labels/codes to them in order to organize them into groups. This is helpful for structuring the data.
Step 4: Identify patterns and connections	Start identifying themes, looking for the most common behaviors or responses from study participants, identifying patterns that can answer research questions, and finding areas that can be explored further.

Box 1
Strengths and limitations of qualitative research

Strengths of qualitative research

- Research questions can be examined in detail and in depth; all subtleties and complexities can be fully explored
- Interviews can be structured and guided by the researcher in real time, depending on the responses being provided by the study participants
- The research framework and direction can be revised/updated as new information emerges
- Data based on human experience can be more engaging and compelling than numerical data
- Research findings can be transferable to another setting

Limitations of qualitative research

- Research quality is dependent on the individual skill of the researcher
- Data analysis and interpretation can be time consuming
- The researcher's presence during data collection, which is unavoidable, can itself affect subjects' responses
- Results can be difficult to summarize in a visual manner

of male infertility is, similarly, dependent on several factors.[4] Qualitative research methodology is, therefore, ideally suited to try and understand how and why affected patients decide to seek care, how care delivery can be optimized, and how patient satisfaction and clinical outcomes can be improved. The following sections describe 2 examples of topics whereby qualitative approaches have been applied in male infertility and reproductive health research.

Knowledge About Male Factor Infertility

Infertility has traditionally been considered a female problem, and resources related to infertility diagnosis, counseling, and treatment have disproportionately focused on the female partner. Although men aspire to parenthood just as much as women, the literature suggests that men have poor knowledge about the factors that influence fertility.[14–17] In addition, men overestimate the chance of spontaneous and assisted conception, which is especially problematic in an era whereby the gap between ideal biological and ideal social age for having children is widening, thereby narrowing the timeframe in which parenthood can be achieved.[14]

A recent qualitative study of men's attitudes and preferences toward family formation provides some insight into this disconnect between the desire for paternity, on 1 hand, and the tendency to delay family building on the other.[18] Through a series of semistructured interviews, Sylvest and colleagues[18] found that even men who desire a nuclear family with biologically related children feel ambivalence about parenthood and feeling "ready." In their analysis, the lack of readiness was linked to men's awareness of the sacrifices and costs involved with parenthood, and their belief that they could safely delay parenthood. The men participating in the study did not, in fact, consider that they may be unable to have their own biological children.

Indeed, a diagnosis of male factor infertility can come as a surprise to many men.[19] It is well accepted that men and women experience infertility differently. The diagnosis can be a distressing experience for men, because of stigma, threats to masculinity, and the perceived need to suppress emotions.[20] Several studies have examined the online emoting of men in relation to infertility via anonymous forum posts on men-only infertility discussion boards. In general, these analyses demonstrate men's psychological needs for vocalizing the emotional burdens of infertility, personal coping strategies, and relationships with other men who are going through similar experiences.[20–22]

Male and female representation and participation in discussions about fertility and reproductive health differ greatly. Based on interviews of men and women of reproductive age, and their physicians, Grace and colleagues[23] found that although men generally wanted to improve their fertility knowledge, and be involved in family building discussions, they thought they did not have a voice on the topic because such discussions have traditionally focused on women. Health care professionals agreed that fertility was perceived as the woman's domain, but also highlighted that poor male involvement is typically observed across health care needs and is not necessarily unique to fertility and reproductive health.[23] In light of these findings, it seems the notion that men are not interested or engaged in reproductive concerns becomes somewhat of a self-fulfilling prophecy.

Taken together, these studies illustrate that knowledge about male factor infertility is lacking among men of reproductive age for several interrelated reasons. Improving gaps in knowledge is

likely to require more than just dissemination of written or verbal information pertaining to male factor infertility; it will ultimately require a shift in societal perceptions of male and female factor infertility, and destigmatization of the psychological impact of a diagnosis of infertility for all affected patients.

Experience of Oncofertility and Survivorship Counseling

Qualitative research methods, such as interviews and surveys, have been frequently used to assess the fertility-associated concerns of patients with cancer, as well as their attitudes toward fertility preservation. A growing body of literature confirms that future paternity is an important concern among cancer survivors, and that failure to address reproductive concerns before undergoing cancer therapy is associated with subsequent distress and regret.[24–26]

As a complement to the existing data, a recent qualitative study demonstrates the tangible benefit of offering oncofertility care to patients with cancer. Wang and colleagues[27] conducted semistructured interviews of newly diagnosed patients with cancer of reproductive age, to explore the fertility care experiences and reproductive concerns of patients with cancer who had access to oncofertility care at the time of their cancer diagnosis. Thematic analysis identified the 5 following main themes: (i) satisfaction with oncofertility care, (ii) a need for individualized treatment and support, (iii) desire for parenthood, (iv) the fact that fertility treatment can be challenging, and (v) the fact that fertility preservation provides a safety net for the future. The investigators concluded patients who access supportive oncofertility care experience low emotional impact of threatened future infertility at the time of cancer diagnosis, and that oncofertility services can assist in lowering the emotional burden of potential infertility in survivors.[27]

MIXED METHODS RESEARCH

It is possible to combine quantitative and qualitative methods, either sequentially (first a quantitative and then a qualitative study or vice versa), where the first approach is used to facilitate the design of the second; in parallel, as different approaches to the same question; or by enriching a dominant method with a small component of an alternative method (such as qualitative interviews "nested" in a large survey). However, this combination of quantitative and qualitative research methods, termed a "mixed methods approach," must be carefully and intentionally designed, to ensure that the theory behind each method is compatible and that the methods are being used for appropriate reasons. A random combination of quantitative and qualitative data, for example, a free text field in a multiple-choice-item survey, does not constitute mixed methods research.

Qualitative and quantitative methods may be used together for corroboration (hoping for similar outcomes from both methods), elaboration (using qualitative data to explain or interpret quantitative data, or to demonstrate how the quantitative findings apply in particular cases), complementarity (where the qualitative and quantitative results differ but generate complementary insights), or contradiction (where qualitative and quantitative data lead to different conclusions).[9]

Appropriate and specific data analysis techniques must also be used in the setting of mixed methods research, rather than a random amalgam of quantitative and qualitative techniques.

SUMMARY

In summary, qualitative research methods represent a valuable tool for investigating the entirety of the experience of male infertility evaluation, diagnosis, and treatment. Qualitative research is rigorous and thorough and well adapted for studying the complex field of infertility and reproductive health. Knowledge gained from qualitative research methods can undoubtedly inform clinical practice and improve support for individuals and couples affected by male factor infertility.

DISCLOSURE

Dr. A. Mehta is supported by a Research Grant from the American Society for Reproductive Medicine.

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