

“No One Asked Me If I’m Alright”: A Mixed-Methods Study Exploring Information/Support Needs and Challenges Engaging Men Diagnosed With Male-Factor Infertility

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Abstract

There is limited research exploring men’s experiences of infertility, and fewer previous studies have examined what information and support men desire after being diagnosed specifically with male-factor infertility. We conducted a mixed-methods study utilizing a combined sequential, concurrent design (online survey/semi-structured interviews). Survey outcomes ($N = 12$) were analyzed using quantitative data analysis, while qualitative survey data ($N = 5$) was analyzed by reflexive thematic analysis. Heterosexual men (> 18 years), fluent in English, diagnosed solely with male-factor infertility/sub-fertility, who required assisted reproductive treatment within Australia in the past 5 years were recruited online and through fertility clinics Australia-wide. Most men reported that their information and support needs were only somewhat, slightly or not at all met. Preferred information sources on male infertility were a dedicated online resource, app, or fertility doctor/specialist, while support was preferred from fertility specialists and partners. Three themes were identified from the qualitative analysis about men’s experiences and support needs when diagnosed with male infertility (a) Ultimate threat to masculinity; (b) Holistic care, and (c) the power of words. The information-rich data collected provided valuable insights into men’s experiences of male-factor infertility and important considerations to improve recruitment for future research. A diagnosis of male-factor infertility has the potential to be deeply impactful and difficult to navigate for men. Adequate and holistic information, recognition of emotional impacts, proactive offers of support and sensitive language are needed to improve men’s experiences when undergoing assisted reproductive technology.

Keywords

fertility, psychosocial, in vitro fertilization, masculinity

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Introduction

Infertility, defined as the inability to conceive after 12 months of regular unprotected sexual intercourse, is a global health concern affecting an estimated one in six couples (Agarwal et al., 2021; Sharlip et al., 2002). Approximately 30% of infertility diagnoses are attributed solely to a male factor and, in total, male-factor infertility is estimated to contribute up to 50% of all infertility cases (Agarwal et al., 2021). Research has identified a growing

desire and expectation for men to be actively involved in preconception care; however, health systems in many countries do not proactively engage men as they attempt to become fathers (J. R. Fisher & Hammarberg, 2012). There is little acknowledgment of men’s roles or emotional needs when interacting with the health system during this time (Hammarberg et al., 2017).

Traditionally, fertility has been viewed as a “women’s problem” given that women undertake most treatments and procedures associated with infertility and pregnancy



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(Culley et al., 2013; Frederiksen et al., 2015; Wischmann & Thorn, 2013). Most previous research on psychological needs and, in turn, desired and available medical and psychosocial support has focused on women's experiences. The psychological well-being of men with infertility has been relatively under-explored to date. This paucity is despite research indicating that men experience similar levels of depression to women with infertility and find infertility diagnosis and treatment highly traumatic (J. R. Fisher & Hammarberg, 2012; Greil et al., 2010; Hanna & Gough, 2020; Ying et al., 2016). Coupled with masculinity norms that frequently prescribe men with "supporter" roles and expectations to "be strong" through adversity, this lack of focus on men's needs can lead to men coping with infertility in silence; and indeed, men tend to suppress their emotional needs to be the primary support for their partner (Culley et al., 2013; Malik & Coulson, 2008; Peronace et al., 2007). These feelings appear to be amplified if the infertility diagnosis is due to a male-factor. Research suggests that male-factor infertility appears to be more stigmatized than other infertility diagnoses (Wischmann & Thorn, 2013). Men with such a diagnosis report questioning their masculinity and "what it is to be a man" (Mikkelsen et al., 2013).

The experience of infertility has been described as a form of loss, frequently resulting in feelings of grief in both women and men (Greil et al., 2010; Swanson & Braverman, 2021; Thorn, 2009). There are gender-specific variations in how men and women cope with emotional distress and loss. Typically, women tend to be more loss-oriented following bereavement, while men tend to be more restoration-orientated, preferring to engage in activities or distractions to assist in their bereavement (Stroebe & Schut, 2010). Despite potential differences in how men and women manage emotional distress, most fertility clinics in high-income countries offer similar psychosocial support opportunities to both partners, mostly in the form of individual counseling/psychotherapy, often with limited uptake, particularly among men (Patel et al., 2018; Schmidt et al., 2003). A lack of gender-specific service provision in infertility treatment likely contributes to men's poorer mental well-being following infertility diagnosis and treatment (D. Fisher et al., 2018).

While there is a small body of research exploring men's experiences of infertility, some specifically including male-factor infertility (e.g., Dolan et al., 2017; Dooley et al., 2011; Hanna & Gough, 2020; Peronace et al., 2007), fewer previous studies have examined what information and support men desire after being diagnosed specifically with male-factor infertility and undertaking assisted reproductive technology (ART) treatments (Culley et al., 2013; Stevenson et al., 2021). Acknowledging the marginalization of men in fertility research, Culley and colleagues (2013) called for "multi-method, interdisciplinary research" (p. 225) on men's infertility information and support needs. This study, therefore, aimed to explore what information and support men diagnosed with male-factor infertility desire and receive at diagnosis, when making decisions about managing infertility, and during ART treatments. We aimed to explore men's preferred timing and method of delivery of information and support and any unmet informational or emotional support needs.

Materials and Method

Participants and Human Ethics Approval

Participants were heterosexual men aged 18 years and older, fluent in English, who had been diagnosed with male infertility (oligo/azoospermia) or male sub-fertility (inability to achieve a pregnancy within 12 months), and used ART within Australia (that may or may not have resulted in a successful pregnancy) in the past 5 years. The decision to only include men diagnosed and treated for infertility in the previous 5 years was to ensure that experiences and outcomes were relevant to current clinical practice. Men who had experienced infertility or sub-fertility where the causes were solely female factor (i.e., ovulation disorders, endometriosis, oocyte factor), undergone treatment for male infertility or male sub-fertility greater than 5 years ago, and under the age of 18 years or not fluent in English were excluded from the study. The study occurred between April and November 2022. Consistent with the Australian National Statement on Ethical Conduct in Human Research 2007 (updated 2018), ethical clearance was obtained from the Human

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Research Ethics Committee at University of Adelaide (H-2022-10), with all men providing written informed consent prior to enrolment in the study.

Study Design and Measures

This mixed-methods study was a combined sequential, concurrent design comprising two main parts.

Part 1: Survey. Comprised a purpose-designed survey hosted by the online platform, *Qualtrics*. Survey items were informed by previous literature on men's experiences of infertility (e.g., Daumler et al., 2016; Dolan et al., 2017; Dooley et al., 2011; Hanna & Gough, 2020; Peronace et al., 2007), and included a mix of existing psychometric scales and author-developed questions.

Survey Measures. Survey items included demographics, fertility history information (including diagnosis and ART history and outcomes), fertility knowledge, information sources, social support, information and support services accessed during ART, perceptions of these resources, and psychological functioning. Six questions also allowed for open-ended responses. The existing psychometric scales used in the survey are outlined below.

Fertility Awareness Survey. Participants' knowledge of factors contributing to male fertility was assessed using Daumler et al.'s (2016) measure of men's male fertility knowledge. The measure assesses men's unprompted fertility knowledge through two open-ended questions (e.g., "Please list all factors you are aware of that can affect a man's fertility") as well as their ability to recognize relevant fertility risk factors through two close-ended questions containing a comprehensive list of risk factors and medical conditions (two closed questions, which contain decoy items). Higher scores indicate greater fertility knowledge.

To date, Daumler et al.'s (2016) measure appears to be the only existing scale that specifically assesses knowledge of male fertility. While it was selected with caution as psychometrics have yet to be reported, the items were developed based on published systematic reviews and expert opinion at the time. In reviewing scale items at the data analysis phase, we identified that based on updated evidence regarding lifestyle factors related to male infertility, some items required re-categorization as "decoy" and/or relevant fertility risk factors. Specifically, there is ample recent literature to suggest that poor diet and lack of physical exercise are established risk factors for developing male infertility, while the evidence for "frequent" bicycling and use of a laptop is less conclusive (e.g., Benatta et al., 2020; Durairajanayagam, 2018; Gan et al.,

2021; Ilacqua et al., 2018; Jung & Schuppe, 2007; Salas-Huetos et al., 2018). For this study, then, we present two sets of analyses: (a) original scale scores and (b) revised scale scores according to our re-classification of scale items as "decoys" or established risk factors (refer to Supplementary Information for re-classified survey items and justification).

MOS Social Support Survey. The Informational/Emotional subscale of the Medical Outcomes Study Social Support Survey (Sherbourne & Stewart, 1991) was used to assess participants' perceived level of available informational and emotional support. The subscale scores included in the survey were calculated as the average score of subscale items transformed to a 0 to 100 scale, with higher scores indicating more support (Sherbourne & Stewart, 1991).

Depression, Anxiety, and Stress Scale. Participants' psychological functioning was measured using the Depression, Anxiety, and Stress Scale (Lovibond & Lovibond, 1995), a 21-item self-report measure assessing depression, anxiety and stress. Scores for depression, anxiety and stress are calculated by adding scores on the relevant items for each subscale to indicate levels of distress in each domain; higher scores indicate a higher level of distress.

Part 2: Interviews. To further explore participants' experiences of male-factor infertility, we employed a qualitative design using individual semi-structured interviews. In line with exploratory aims, the interview schedule contained open-ended questions informed by previous literature on men's experiences of infertility and in vitro fertilization (IVF; e.g., Culley et al., 2013; Dolan et al., 2017; Dooley et al., 2011; Hanna & Gough, 2020; Peronace et al., 2007). Example questions included: "Could you share a little about your experience(s) of infertility?" and "Can you tell me about the information you wanted when you were diagnosed with male infertility?."

Research Consultation. Before commencing recruitment, we obtained feedback from a research reference group sourced from the Freemason's Center for Male Health and Wellbeing registry, which includes more than 500 men willing to be contacted for human research projects. Five men from the registry provided feedback on the questions' clarity, appropriateness, and language suitability. Overall, they had overwhelmingly positive feedback on the draft survey and interview schedule, offering only minor suggestions to improve the sensitivity of wording to some items (e.g., particularly relating to questions of previous experiences of pregnancy loss or infant death).

Procedure

The initial approach to recruitment involved distributing physical study flyers in fertility clinics around Australia, Victoria ($N = 3$), South Australia ($N = 4$), New South Wales, ($N = 1$), Northern Territory ($N = 1$), and Western Australia ($N = 1$) displayed as posters in fertility clinics and semen collection waiting areas. The study was also advertised online through social media pages of existing men's health organizations and closed fertility support groups and networks, including Healthy Male Australia, the Pink Elephant Support Network, and Men's IVF Support Australia. Following 3 months of slow recruitment, we also developed flyers in the form of business cards for fertility clinics to distribute to all new clients as part of standard "welcome packs." In addition, we attempted paid targeted social media advertisements through *Facebook*. A final recruitment attempt was also made through international in/fertility, fathering and Australian pages on the social media platform *Reddit* and Australian in/fertility *Instagram* pages. Based on the latest 2020 Australia and New Zealand Assisted Reproduction Database data, we estimated that during our study (April to November 2022) approximately 16,500 men would have sought treatment for male-factor infertility within Australia.

The study flyers contained brief information about the survey/interviews, including a QR code and web link, opening to a cover page with a preamble providing detailed information about the study. For the survey, several mandatory questions were asked to confirm participants' eligibility and consent. The survey took approximately 20 min to complete. Depending on participant responses, skip logic was incorporated to show/hide questions relevant to individual experiences. For the interview, participants could provide their email addresses at the end of the survey or in a separate online link for us to arrange an interview time/place.

A registered psychologist with extensive research interviewing experience in male reproductive health and grief conducted the interviews. Interviews were conducted over Zoom ($N = 4$) or telephone ($N = 1$), dependent on participant preference. On average, interviews lasted 78 min (range 62–96 min). With participants' consent, each interview was audio-recorded and transcribed verbatim. Each participant was assigned a pseudonym, and identifying information was removed from the final transcripts. In line with Tracy's (2010) recommendations for quality in qualitative research, participants could review their transcripts for accuracy and provide member reflections on the themes. Methodological rigor was further enhanced by keeping an audit trail to document notes on the methodology, decisions made, reflections on the interviews and self-reflexivity.

Ethical Considerations

In recognition of the sensitivity of the topic and the potential for participants to experience emotional distress in reflecting on their experience of male infertility, a comprehensive distress protocol was developed and articulated to participants. This protocol included providing contact details for national 24/7 telephone support lines and participants could elect to receive the results of the distress screening tool (DASS-21) included in the survey via email. Overall, no concerns regarding participant distress were raised.

Data Analysis

Quantitative data analysis was performed using *SPSS Statistics*. Survey data were analyzed by the researchers and summarized using descriptive statistics to provide a broad overview of participants' experiences and preferences for male infertility information and emotional support.

In the second analysis phase, qualitative open-ended survey responses and the interview data were combined and analyzed using reflexive thematic analysis, underpinned by a realist ontological position whereby participants' accounts were assumed to directly reflect their experience (Braun & Clarke, 2013, 2019). Initially, qualitative data were read and reviewed repeatedly by the registered psychologist who generated initial codes. Next, codes were combined thematically to form an initial thematic map. Two additional researchers independently reviewed the data and cross-checked the initially generated codes and themes to ensure trustworthiness and consistency. Numerous meetings were held between all authors to compare the data and decide on a thematic structure. Interview participants could then undertake member reflections to review the initial thematic structure for accuracy in capturing their experiences. Only one participant accepted the offer to provide member reflections and did not request any changes. All authors approved the final themes.

Results

Part I: Recruitment

Despite extensive advertisement and efforts to recruit males diagnosed with male-factor infertility to participate in this study, we experienced substantial challenges in recruitment. Most participants ($N = 13$, 81%) were sourced through initial advertising through fertility clinics. While data indicated that the additional paid advertisements reached more than 30,000 people and generated more than 1,200 unique link clicks, only one fully

Table 1. Participant Characteristics

Name ^a	Age	Cultural background	Highest education level	Infertility diagnosis	Type of ART
Survey participants					
	25	Australian	High school completion	Oligospermia	Medications, IVF
	38	European	Postgraduate degree	Teratospermia	IUI, time intercourse
	46	Australian	TAFE/Trade	Asthenozoospermia, teratospermia	IVF, ICSI, sperm donor
	36	European	Postgraduate degree	Azoospermia	IVF, ICSI
	35	Australian	TAFE/Trade	Asthenozoospermia	IVF, ICSI
	50	Asian	Postgraduate degree	Oligospermia	Medications, timed intercourse
	33	Australian	Year 11	Azoospermia	Surgical extraction of sperm
	40	Asian	Postgraduate degree	Oligospermia, asthenozoospermia	Medications
	23	American	Postgraduate degree	Asthenozoospermia	Timed intercourse
	33	Australian	Postgraduate degree	Genetic disease/syndrome associated with sperm abnormalities	IVF
	40	European	High school completion	Oligospermia, asthenozoospermia, varicocele	IVF, ICSI
Interview participants					
Eric ^b	47	European	Bachelor degree	Oligospermia	IVF, ICSI
Jackson	41	Australian	Bachelor degree	Testicular failure	TRT
Mitchell	37	Australian	Bachelor degree	Oligospermia	IVF
Paul	41	Australian	Diploma	Asthenozoospermia	IVF
Nicholas	38	European English	Bachelor degree	Azoospermia	Surgery

Note. ART = assisted reproductive technology; IVF = in vitro fertilization; IUI = intrauterine insemination; TAFE = Technical and Further Education; ICSI = intracytoplasmic sperm injection; TRT = testosterone replacement therapy.

^a Participant names are pseudonyms. ^b Also completed the online survey.

completed survey participant was secured through this approach. Similarly, data indicated that posts on *Instagram* and *Reddit* had a cumulative reach of more than 4,100, yet only two additional participants were gained through these approaches after our second recruitment push. These findings and the recruitment challenges experienced have important wider implications for engaging men in fertility health services.

Part 2: Participants

Of the 49 participants who commenced the survey, 18 met the study eligibility criteria. Of these, 12 completed the full survey and were included in the final sample (completion rate = 67%). Participants who did not fully complete the survey dropped out immediately following the eligibility questions ($N = 3$, 50%) or during the fertility knowledge questions ($N = 3$, 50%). One survey participant also elected to participate in an individual interview, and another four participants only participated in an individual interview, bringing the total sample size to 16. At the time of the study, participants were aged 23

to 50 years ($M = 38$; range 25–47) and had a variety of male-factor infertility diagnoses ranging from poor sperm motility or low sperm count to complete testicular failure. Importantly, all appeared to be at a later (rather than initial) stage of their infertility/ART journey, with the most recent diagnosis received in 2021. Table 1 provides a summary of participant characteristics.

Part 3: Quantitative Results

Table 2 summarizes the main survey findings. Overall, participants reported being somewhat or very/extremely knowledgeable of factors relating to male reproduction, and five (42%) could recall more than three lifestyle factors related to male infertility without prompts. Mean scores for correctly identified male infertility knowledge scores (according to Daumler et al.'s, 2016 scale) were generally low (mean category scores below 60%). Following our re-classification of “decoy” items in Daumler et al.'s (2016) scale, participants' individual and mean category knowledge scores all slightly improved. More specifically, correctly identified items (using our

Table 2. Summary of Online Survey Responses

Measure	N	Score
Self-reported knowledge of male reproduction		
Very or extremely knowledgeable	4	—
Somewhat knowledgeable	8	—
Slightly or not at all knowledgeable	0	—
Unprompted recall of lifestyle factors associated with male infertility		
Smoking	4	—
Physical exercise	2	—
Diet/nutrition	3	—
Weight/obesity	2	—
Alcohol consumption	4	—
Chemical exposure	2	—
Drug use	1	—
Stress	1	—
Physical injury	3	—
Caffeine consumption	1	—
Overall sample mean of correctly identified male infertility knowledge scores		
Original scoring		
Category 1: Modifiable risk factors for male infertility		55% (range 20%–68%)
Category 2: Fixed risk factors for male infertility		45% (range 11%–78%)
Category 3: Health issues relating to male infertility		42% (range 9%–64%)
Revised scoring		
Category 1: Modifiable risk factors for male infertility		61% (range 20%–84%)
Category 2: Fixed risk factors for male infertility		51% (range 22%–67%)
Category 3: Health issues relating to male infertility		42% (range 9%–91%)
Sources of information about male infertility		
Books	5	—
Fertility doctor and/or nurse	8	—
Family and/or friends	4	—
Internet and/or online blogs	8	—
Perceived extent to which information needs were met ^a		
Very much or extremely met	4	—
Somewhat met	1	—
Slightly or not at all met	5	—
Preferred method for receiving information about male infertility		
Male infertility app	4	—
Dedicated male infertility website	9	—
Fertility doctor/health professional	5	—
Sources of psychosocial support for infertility		
Informal		
Partner	9	—
Family members	7	—
Friends	6	—
Work colleagues	5	—
Other men with infertility	4	—
Formal		
GP	5	—
Fertility specialist	6	—
IVF clinic nurse	5	—
Fertility counselor or psychologist	7	—

(Continued)

Table 2. (Continued)

Measure	N	Score
Perceived extent to which psychosocial support needs were met		
Very much or extremely met	4	—
Somewhat met	2	—
Slightly or not at all met	4	—
Preferred method for receiving psychosocial support for infertility		
Informal		
Partner	7	—
Family members	3	—
Friends	3	—
Work colleagues	0	—
Other men with infertility	1	—
Formal		
GP	4	—
Fertility specialist	7	—
IVF clinic nurse	2	—
Fertility counselor or psychologist	3	—
Men's support group	2	—
MOS social support scale scores ^a		
Median (transformed) score	10	60.9
Range (min—max)		25.00–84.80
DASS-21 scores ^{a, b}		
Median depression total score	8	4.5
Range (min—max)		0.0–15.0
Median anxiety total score	8	2.5
Range (min—max)		0.0–11.0
Median stress total score	8	5.5
Range (min—max)		1.0–14.0

Note. IVF = in vitro fertilization; MOS = Medical Outcomes Study; DASS = Depression, Anxiety and Stress Scale; GP = General Practitioner.

^a Some missing responses from participants. ^b DASS-21 reference scores: Depression (0-6 normal-mild; 7-13 moderate-severe; 14+ extremely severe); Anxiety (0-5 normal-mild; 6-9 moderate-severe; 10+ extremely severe); Stress (0-9 normal-mild; 10-16 moderate-severe; 17+ extremely severe).

revised item classification) participants most frequently endorsed as contributors to male infertility included alcohol consumption (9/12, 75%), exposure to chemicals/pesticides (10/12, 83%), genetics (9/12, 75%), lack of regular exercise (11/12, 92%), overweight/obesity (11/12, 92%), long-term use of antibiotics (9/12, 75%), pain/injury to the testes (9/12, 75%), poor diet (10/12, 83%), smoking cigarettes (9/12, 75%), stress (10/12, 83%), and drug use (9/12, 75%). In contrast, the most incorrectly identified risk factors (using our revised item classification) were ethnicity (10/12, 83%), coffee consumption (> four cups per day; 11), frequent bicycling (8/12, 67%), and migraines (9/12, 75%).

Participants reported mostly receiving information about male infertility from their fertility doctor/specialist, the internet and/or online blogs. Their preferred information sources were a dedicated male infertility online resource, app, or fertility doctor/specialist. Participants appeared to rely predominately on their partner or family

members for informal psychosocial support and preferred for their partner to be their main source of support. While four participants reported perceiving that their psychosocial support needs were “very much” or “extremely” met, most (6/10, 60%) reported their needs were only somewhat, slightly or not at all met.

Part 4: Qualitative Results

We developed three themes from across the interview and open-ended survey responses data, each with two sub-themes (see Figure 1).

Theme 1: Ultimate Threat to Masculinity. Participants indicated that a male-factor infertility diagnosis could threaten socially constructed ideals in Australian society regarding masculinity. Participants described perceiving societal expectations for “masculine men” to successfully father children, and, as such, a diagnosis of male-factor

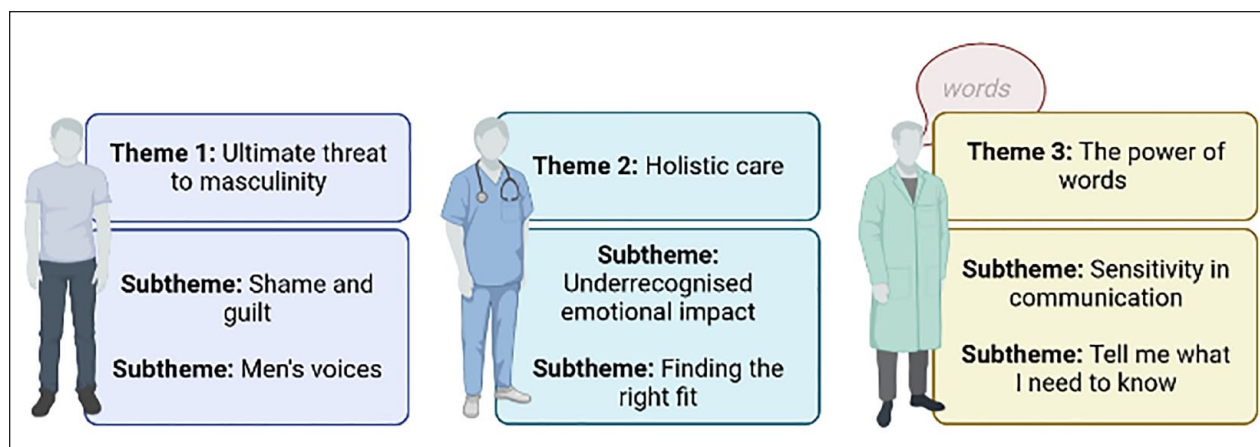


Figure 1. Thematic Map

Note. We developed three themes from across the interview and open-ended survey response data, each with two sub-themes that described men's experiences with male-factor infertility/subfertility.

infertility had the potential to make them feel “less of [a] man” (Eric). For some participants, this “ultimate threat” to masculinity ideals had detrimental consequences for their ability to share their experiences with others and seek appropriate support. The intensity of threat-related feelings appeared to be influenced by the severity of the infertility diagnosis and whether infertility as part of a couple relationship was solely related to male factors or a mix of male and female factors. Regardless of the intensity of feelings, all participants experienced difficulty navigating the social implications of infertility.

Subtheme 1.1: Shame and Guilt. All participants acknowledged that a male-factor infertility diagnosis could, or did, contribute to feelings of shame and/or guilt leading to substantial difficulties discussing their diagnosis with others, often resulting in isolation and difficulty seeking support. While shame acts as an inner warning system against threats to the self, guilt arises from a concern for the welfare of others. Participants with more severe infertility diagnoses (e.g., azoospermia or testicular failure) described feeling shame and embarrassment. Due to feelings of shame, participants described substantial difficulties discussing their diagnosis with others, often resulting in isolation and difficulty seeking support. Jackson and Mitchell described:

I've just had to deal with this mostly on my own. Um, so I haven't told all my friends and all that because for a man, it's embarrassing.—Jackson

...we've chosen to be very private about [infertility]. Um, so only our families know about it, no one else does [...] I guess because we just didn't want to be labelled, so to speak, or, or have that stigma attached to us.—Mitchell

Participants additionally explained that a lack of open discussion about male reproductive issues in society led to feelings that male infertility (particularly when compared to female infertility) was inappropriate to speak openly about, compounding experiences of shame and isolation. Eric shared:

...it almost feels a bit dirty to talk about. You don't talk about that stuff. And, I'll be honest, it feels like women can talk about their reproductive [...] issues quite openly, it's quite, everywhere. But as soon as a guy talks about, well, 'I feel upset,' well—we don't talk about that.

Participants with less severe infertility diagnoses (e.g., asthenozoospermia and oligospermia) did not report experiencing the same level of shame. Although, they also perceived taboo and stigma surrounding infertility more broadly and struggled to share or discuss their experiences with others. Participants in a relationship also described the impact they felt their diagnosis had their relationship. Specifically, a diagnosis of male-factor infertility, particularly in the absence of female-factor infertility, led these participants to see themselves as “broken” (Eric) or at fault. Being the “reason” why their partner had to endure the physical process of ARTs such as IVF resulted in substantial feelings of guilt. Mitchell and Nicholas explained:

...it's more so the feeling that you know you're responsible for this. Um, so I know every day [...] my wife could have had kids naturally without me. Um, and I'm essentially the one that's put her through the, through the [IVF] process.—Mitchell

I feel like I've let [wife's name] down, but we've talked about that as well. Like I know it's just my body, right,

there's nothing I can do about it, it's not intentional. But I feel like I've kind of, you know, I'm letting you [wife] down a little bit.—Nicholas

Subtheme 1.2: Men's Voices. Relating to the sub-theme above, participants expressed that there needed to be more public discourse—prioritizing males' experiences—to reduce the stigma and silence surrounding male infertility. They suggested that if men experiencing male infertility could “speak to other men” (Jackson) in the same (or a similar) position, feelings of shame, isolation, and loneliness could be reduced. Eric explained:

I've always found that very useful, professionally and personally, [to speak to] people who understand where you're coming from. You know, you can have that conversation; “I get it mate,” you know, “I've been through it, I understand.”

Indeed, participants who accessed peer support groups for male infertility reported that these networks made a positive difference to their experiences. Importantly, Mitchell (and others) emphasized that health professionals (such as counselors or psychologists) could not fill this unmet need for peer support and that peer support would be most impactful if delivered in a one-to-one or face-to-face format:

. . .this [support] network, it's more about talking to other people that are impacted by the same thing. Not—not someone telling you that this is completely normal, it can happen to anybody, um, that sort of thing. Anyone can say that. It's—but really, hearing other people's stories, how they're impacted, what it's meant for them, you know, changes what it means for you at the same time.

Participants also acknowledged that not all men would be comfortable attending or joining peer support groups. In addition to offering connections to local peer supports, they suggested that access to online written, audio or video-recordings of men's stories would be beneficial.. Jackson and Nicholas suggested:

Like you could do, for example, like, video links where people could go on this thing and if they don't want to show their face or whatever they could put a thing on their camera, and have certain men who have [had] infertility, like at the end of their journey or whatever, can go and just talk.—Jackson

. . .you could trigger [peer support] after diagnosis. And you just, even if you just put in a 30 minute, yeah—lots of people probably don't want to talk about it—but even just a 30 minute chat with someone who sort of gives you that bit of guidance, I think, would have been really valuable, yeah would have been really valuable.—Nicholas

Overall, regardless of the format or delivery of peer support, all participants described that it was important to prioritize men's voices when developing male infertility support resources, or strengthening referrals to existing support groups and services, to help communicate a key message to other men that they are “not alone” (Mitchell).

Theme 2: Holistic Care. All participants discussed the unmet need for holistic infertility information—acknowledging the full range of medical options, available emotional supports, and guidance on modifiable behavioral/lifestyle factors relating to fertility. They additionally stated that current infertility treatment and support services were “gynocentric” (Eric), and consequently, there was a lack of male-specific information and emotional support available throughout all stages of their infertility journey.

Subtheme 2.1: Under-Recognized Emotional Impacts. Participants indicated that most health care professionals overlooked the emotional impact of infertility on men. Rather, they expressed that the focus of consults and treatment was highly medicalized, with doctors frequently discussing only the “facts” of their infertility and summarizing practical steps they could take (i.e., medication or procedures) to increase their chances of fathering a successful pregnancy. Eric and Jackson shared:

. . .it was very practical. There was never a conversation with the doctor or anybody about, well, how do you feel about this?—Eric

. . .you're a man, you'll be able to deal with it, these are the facts, you don't really have to have any feelings around it—Jackson

Participants also stated that very limited support and services were available specifically for men experiencing male-factor infertility. While many fertility clinics in Australia offer in-house counseling services to couples undergoing ART, participants explained that these were not offered directly to them and were accessed and delivered predominately by women. Due to a lack of active offers for emotional support, all participants independently searched online for options. Barriers to finding information and services included a lack of time, uncertainty about what/where to search, and a lack of relevant results from search attempts. Eric said:

Again, who do you go to even ask? I need a psychologist, who do I speak to? [. . .] I'm a clinician [. . .] I know how to access referrals for people, I've done all this kind of stuff, but that's hard even from my perspective trying to find that specialist area. So again, for the average guy out there trying

to find that [. . .] it would be a nightmare, to be honest with you.

All participants expressed a desire for health care professionals to actively recognize their emotional needs and offer referrals to available emotional support services multiple times throughout the journey. Participants strongly expressed the need for fertility clinics to develop and proactively promote male-specific information packs and existing support services to all male clients.

Subtheme 2.2: Finding the Right Fit. All participants discussed the importance of finding “a clinic [. . .] that you’re happy with” (Paul) and specialists they could trust to provide person-centered care. All participants reported that their initial consults with many fertility clinics felt “business-like.” Even where they encountered individual health care professionals they perceived as more caring, the structure and systems of many fertility clinics appeared to prioritize financial remuneration, and participants reported feeling like “just a number.” Mitchell and Paul explained:

. . .before we’d even sent the tests back, we’d already received a bill for the money [. . .] so it was very, almost, cash hungry, like, we were just a number.—Mitchell

. . .um, you know, we only went in there for a conversation with [clinic] and then it was like, bang, straight into it. You know, I think once they get you in there, they yank on your heart strings and your emotional strings and then yank on your wallet after that—Paul

Men described experiences with fertility specialists who were only focused on the medical aspects of fertility rather than taking a holistic approach. Participants also described having to “shop around” to find their treating team/s. Mitchell explained:

. . .there are several tiers of clinics. There’s the cheap tiers that, um, or the bulk—bill clinics that ultimately look to bulk—bill, they provide a simple level of service and it’s pretty straight forward. Then there’s the private clinics that charge for everything, um, but they’re very structured, it’s by the book, it’s their own way, they don’t want to look outside, and they don’t really cater to tailor—made issues, or challenges [. . .] Then there’s the more bespoke clinics that are willing to you know, work outside the box, try different things, see what can be done [for you]—Mitchell

Overall, participants expressed the importance of finding a fertility clinic (and individual health care professionals) who “fit” their individual needs. Across the sample, a strong desire was expressed for fertility clinics and specialists to provide holistic care that recognized the full

spectrum of medical, emotional and lifestyle preferences.

Theme 3: The Power of Words. When discussing the information participants received and desired concerning male infertility, language emerged as a central part of creating a positive or negative experience with health care services. Participants described that communication from health care professionals was often insufficient and/or insensitively delivered, which could adversely impact their short- and long-term mental health. Across the sample, there was a consensus that “all words are powerful” (Jackson), and participants desired information to be delivered comprehensively and sensitively.

Subtheme 3.1: Sensitivity in Communication. More often than not, participants reported experiencing a lack of sensitive communication from their health care professionals. While all eventually identified medical teams or individual professionals they perceived were supportive of their needs, communication, particularly at diagnosis, appeared problematic, with insensitive language frequently used to “break the news” of male-factor infertility to men. Jackson and Eric shared:

[Doctor said]: “Your nuts are stuffed.” And that was very traumatic for me. Even though I knew in my own mind, he could have put it in a much gentler way. (Jackson)

. . .your sperm [. . .] they’re all kind of knackered [. . .] kind of humorous, but not really. (Eric)

Both health care professionals and participants frequently used humor in fertility-related communications. Although participants acknowledged that health care professionals were perhaps trying to be “male friendly” through their use of colloquial (and attempted “humorous”) language, explanations such as the above amplified feelings of shame, stigma and guilt described in Theme 1. Some participants described using humor as a “coping mechanism” to mask feelings of awkwardness and uncertainty, particularly relating to the activity of providing sperm samples. Paul explained:

I suppose I made a bit of a joke about it, you know, I might come out and say “Oh, that didn’t take me long, there you go, there’s not much there,” but, you know ((laughs)) or something like that, you know? [. . . but] I wouldn’t have to add humour to everything if things were different, I suppose.

As a result of these experiences, all participants described a need for health care professionals to be educated about the importance of sensitive communication with male patients experiencing male-factor infertility.

Subtheme 3.2: Tell Me What I Need to Know. Participants also described that they found it difficult to know what to ask their health care team about their diagnosis and treatment for male infertility. In the absence of information provided by their health care team, participants all completed independent research on male infertility in preparation for meetings and appointments. Similarly, to attempts to locate support options, searching for medical information on male infertility was a difficult process that added to the emotional burden of an infertility diagnosis.

I had to do all the research and before I went to the medical team [. . .] so before I walked in I could ask them all the tough questions, that I expected answers to.—Jackson

I did do a lot of research [. . .] A lot, a lot of web—browsing as to, you know, is this known to cause this [. . .] What are the chances of having a child without [IVF], um, all that sort of stuff. And there wasn't, yeah [. . .] nothing of significance, basically, just all random medical journals and websites, whatever I could find and read, basically, relating to [my situation].—Mitchell

Given these difficulties, all participants expressed a need for health care professionals to proactively provide them with information on what their infertility diagnosis could mean for them—both medically and emotionally—and longer appointment times to allow space and opportunity to explore questions. Relating to Theme 2, all participants expressed a desire for comprehensive information on holistic infertility management options. Eric summarized:

You know, I want[ed] to be able to sit down with somebody and say OK, just talk me through it. Explain this to me.

Participants also indicated that online and physical forms/brochures containing relevant information would be useful in addition to clinician-delivered information. To prevent overwhelm, they suggested information should be clearly categorized, flexible according to individual diagnoses/needs, and available to work through at individuals' own pace. Information in the form of a staged "guidebook" or "map" was suggested by multiple participants to assist with navigating the (often long) journey of infertility and ART. Nicholas explained:

I just feel like if there's [. . .] like a physical roadmap of what your journey looks like. So, you know, you've got—OK, you're in this period where, you know, you've got to wait for these tests and in this period you should be going to seek out these therapists. Then you've got your egg retrieval, then at that point you can book your microTESE and—you know? And maybe there's not a cookie-cutter approach where you can just drop it into everyone's infertility journey, but um, I kind of feel like I was trying to map it out, or we were trying

to map out what that journey looked like, what the timings looked like, ourselves. Um, and I wasn't sure about, you know, what things we've got to do next and stuff like that.

Overall, there was a clear unmet need for male-specific and comprehensive information regarding a diagnosis of male-factor infertility. Participants expressed a need for active information provision from fertility clinics to assist them in understanding medical terms, options for holistic supports, and what to expect from the infertility journey.

Discussion

The findings of our study provide valuable insights into the experiences of men with male factor infertility undergoing ART in Australia within the last five years. Difficulties certainly remain regarding recruiting men to this area of research, perhaps reflecting the sensitivity surrounding the nature of reproductive health topics and the ongoing stigma and shame surrounding infertility—particularly male-factor infertility—in Australia. However, our participants provided rich and detailed insights into their experiences to inform future research and recommendations for developing male-specific informational resources and supporting person-centered service provision.

Quantitative data indicated that participants' knowledge of factors relating to male infertility was limited. These findings are not dissimilar to previous research using the same scale, often finding generally low levels of fertility knowledge despite high self-rated perceived knowledge (Daumler et al., 2016; Kruglova et al., 2021). Re-scoring Daumler et al.'s (2016) scale based on our knowledge and updated research evidence on factors relating to male infertility slightly improved participants' knowledge scores, indicating that our sample's knowledge about factors currently known to impact male infertility was better than initially indicated. Qualitative data also provided valuable insight into potential reasons for a lack of knowledge about factors relating to male-factor infertility, as participants described a lack of information provided by fertility clinics, along with significant challenges in locating information online. In addition, all participants desired comprehensive information on holistic lifestyle factors that could increase their chances of improving their fertility; but, many clinics provided little to no information for patients on this.

Qualitative data from our in-depth interviews also highlighted consistent unmet psychosocial needs for males diagnosed with male-factor infertility. Particularly, there appears to remain a lack of recognition and validation of the emotional impact of infertility on men with many health care professionals participants encountered,

as well as scarce male-specific information resources on medical options when diagnosed with infertility and strategies to manage potential emotional impacts. Similar unmet needs have been described in previous qualitative studies focusing on experiences of male infertility (e.g., Mikkelsen et al., 2013; Wischmann & Thorn, 2013), with more recent studies particularly highlighting the complex interplay between a diagnosis of male infertility and social constructions of masculinity (e.g., Hanna & Gough, 2020). Our study has added important new insights regarding men's desire for information on holistic lifestyle factors relating to infertility as well as a clear need for proactive recognition of emotional impacts and repeated offers to refer to appropriate supports throughout all stages of the infertility journey. Language also emerged as a significant factor shaping men's experiences of male infertility and support-seeking. While previous literature relating to men's engagement in health services and psychological treatment more broadly has indicated that colloquial language and humor can help in building rapport with male clients in a mental health setting (e.g., Seidler et al., 2018; Smith, 2007), particularly for more severe forms of infertility, such informal language or attempts at humor may perpetuate potential feelings of shame, guilt, discomfort, embarrassment, and/or be damaging to men's mental health. The use of humor appeared more problematic for more severe diagnoses of male infertility, which participants described as more of a "threat" to masculinity ideals.

Limitations and Future Research

While we employed extensive efforts to recruit men who had experienced male-factor infertility and undertaken ART within the past 5 years, we acknowledge that our final sample size is a limitation. Indeed, it seems that the question of Culley and colleagues' (2013): "where are all the men?" in infertility research—particularly on male-factor infertility—remains a significant one. Previous research on men's engagement in infertility research, as well as health care services research more broadly, has acknowledged similar and consistent difficulties in initiation and retention of men due to barriers including men's anxieties surrounding infertility (Dolan et al., 2017), stigma surrounding men's psychological issues and help-seeking (Galdas, 2013; Seidler et al., 2018), and reproductive/family health clinics focusing predominately on servicing women and children (Culley et al., 2013; Pfitzner et al., 2018). In addition, some research has suggested that active and direct approaches to engagement or recruitment, which "meet men where they are," may be more successful (Dolan et al., 2017; Pfitzner et al., 2018; Seidler et al., 2018), and our ethical approval only permitted passive recruitment strategies. The impact of

COVID-19 and the subsequent public mistrust in the medical research sector (Faasse & Newby, 2020; Nicolò et al., 2023) may have also contributed our low recruitment rates.

Given that reflexive thematic analysis aims to gain richness of data over Generalizability, the qualitative data we collected provide valuable insights into some men's experiences and indications of important considerations to improve recruitment for future research. Particularly, it is pertinent that future research carefully considers creative and novel strategies to recruit men experiencing male-factor infertility. There is potential to explore the effectiveness of more proactive and direct recruitment strategies (e.g., researchers attending fertility clinics or support groups to meet men face-to-face and share study information/links) to overcome key barriers, including stigma and shame that may prevent men from self-selecting into research studies on sensitive reproductive health topics. We recommend that future research consider broader settings for recruitment that meet men in settings where they are already likely to be, for example, workplaces, sporting clubs, and popular online forums not directly related to reproductive health or infertility.

Finally, our participants were all at later stages of their infertility journey, indicating that men may feel more prepared to discuss their experiences later, rather than in the early stages of diagnosis and active treatment. Sample sizes in future studies could be increased by widening the time since diagnosis criteria. While expanding time criteria could be open to service changes over time, hearing men's reflections on what they needed or the types of services or resources they would have engaged with during their journey would be valuable, regardless of time passed.

Future research should seek to develop and trial male-specific information and support resources, such as those recommended by our participants. It is clear that co-designing information resources with men who have experience with male-factor infertility would be beneficial to ensure relevance, ease of understanding, and acceptability of resource content.

Recommendations for Practice

There is a clear need for in/fertility services to implement proactive support approaches that routinely engage directly with men and acknowledge the complexity of experiences in the context of a diagnosis of male-factor infertility. Specific recommendations for fertility clinics include:

- Provide information to all men diagnosed with male-factor infertility that is directly relevant to their diagnosis (including definitions, potential causes and treatments, including its course) and

highlight the potential emotional impact of infertility on men.

- Based on the most up-to-date evidence, provide all men with information on holistic lifestyle factors that may assist their chances of improving infertility.
- Co-design helpful information with men who have experienced male-factor infertility to ensure relevance, ease of understanding, and acceptability.
- Offer and/or trial group-based male infertility information sessions, either online or in-person, with opportunities for men later in their journeys to speak from individual experience and provide tips/advice to men early in their infertility journey.
- Design information on male-factor infertility in diverse formats, including written, video, and verbal, to accommodate all learning/information presentation style preferences.
- Provide professional development sessions for all clinic staff to raise awareness of the importance of sensitive language and communication styles that consider the impact of stigma and shame on men's experience of male-factor infertility.

In addition, specific recommendations for health care professionals working in fertility clinics and supporting people undergoing ART include:

- In all fertility consults with men, highlight the potential emotional impacts of a male-factor infertility diagnosis and routinely offer referrals to emotional support services and/or (online or local) peer support groups at multiple points throughout their infertility journey.
- Provide relevant ongoing information and support to men with male-factor infertility, including at diagnosis, during and after treatment. Information should be stage-specific so as not to overwhelm men with information; it may also be repeated at different times as a reminder of important considerations and available supports.
- Maintain sensitive language in all communications with men diagnosed with male-factor infertility. While in many areas of health service provision colloquial and humorous language has been recommended, current findings suggest that humor is not always appropriate due to guilt and shame associated with male infertility and could damage men's mental health.

Conclusion

A diagnosis of male-factor infertility has the potential to be deeply impactful and difficult to navigate for men.

Adequate and holistic information, recognition of emotional impacts, proactive offers of support, and sensitive language are needed to improve men's experiences when undergoing ART.

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Author Contributions

KLO—design, acquisition, analysis, interpretation, drafting and approval of final manuscript. MO—conception, design, analysis, interpretation, revision and approval of final manuscript. DT—conception, design, analysis, interpretation, revision and approval of final manuscript. NOM—conception, design, interpretation, revision and approval of final manuscript.

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Data Availability Statement

The qualitative data underlying this article will be shared on reasonable request to the corresponding author.

Supplemental Material

Supplemental material for this article is available online.

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