

Social media engagement with transgender fertility content

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Objective: To identify transgender fertility content with the highest online engagement on social media, determine its accuracy and quality, and see how this has changed over a 2-year period.

Design: BuzzSumo, a content research tool, was used to identify the top 10 article links related to transgender fertility most interacted with on the social media platforms of Facebook, Twitter, Pinterest, and Reddit. We compared article links from June 2019 to June 2020 and from June 2020 to June 2021. The articles were categorized as accurate or misleading based on the references cited and current research. A qualitative analysis was performed using article references to scientific literature and journal impact factors. User engagement was compared with the accuracy of online information using descriptive and χ^2 statistics.

Setting: Not applicable.

Patient(s): Not applicable.

Intervention(s): Not applicable.

Main Outcome Measure(s): Not applicable.

Result(s): The top 10 article links for each time period were examined, with 7,077 total engagements. Fourteen articles referenced 14 unique scientific studies; no references were available for the remaining 6 articles. Alternative media was the primary source of popular article links, and accurate articles accounted for 74% of the total engagements. There was a significant association between the number of engagements with accurate articles and the time periods used for analysis ($P < .0001$).

Conclusion(s): As the popularity of social media continues to rise, patients are more likely to turn to online platforms in search of information and advice regarding fertility. Transgender fertility is an emerging topic covered by scientific peer-reviewed journals, news organizations, and alternative media, and it is imperative for internet users to consider the accuracy of the information presented by social media platforms. Further, reproductive endocrinology and infertility physicians should use social media platforms to educate their patients on the topic of transgender fertility and prevent the spread of misinformation. (Fertil Steril Rep[®] 2022;3:100–5. ©2021 by American Society for Reproductive Medicine.)

Key Words: Transgender, LGBT, fertility, social media, internet

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The role of social media in patient access to online health information has expanded in recent years. Social media allows internet users to educate themselves, learn about patient experiences, communicate with each other and with medical professionals, and lessen the stigma associated with certain medical conditions (1).

Patients should be offered equal access to assisted reproduction and other

fertility services regardless of gender identity status. Transgender individuals comprise a growing subgroup of the lesbian, gay, bisexual, and transgender population seeking fertility care. The term transgender is used to describe a person whose gender identity is different from the sex assigned at birth. It has been estimated that 0.6% of adults in the United States identify as transgender (2, 3). There is known lack of

data regarding assisted reproduction and fertility preservation specific to transgender individuals, including the unknown long-term effects of exogenous hormone therapy for patients and their offspring (4, 5). Although there are no detailed practice guidelines on fertility treatment for transgender patients, the American Society for Reproductive Medicine (ASRM) Ethics Committee has discussed important considerations in caring for this population (5). Some of our current methods in fertility preservation for transgender patients are based on approaches used for patients with cancer (6).

Both the American College of Obstetricians and Gynecologists and ASRM have published guidelines stating that providers should discuss

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TABLE 1

Summary statistics of article sources and accuracy during 2019–2021.

Year	2019–2020			2020–2021		
	Misleading or inaccurate	Accurate	Total	Misleading or inaccurate	Accurate	Total
Source website						
Scientific peer-reviewed journal	0	3	3	0	2	2
News organization	1	3	4	0	3	3
Alternative media (e.g., blog or interview)	1	2	3	3	2	5

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fertility preservation options with their patients before gender transition, which may include hormone therapy and/or gender confirmation surgery (2, 5). However, not all fertility centers provide services to transgender patients. Some centers may only provide services to certain populations under a specific set of circumstances, such as female-to-male transgender patients with a female partner who have already transitioned (7–9).

Transgender patients face many barriers to care, including discrimination, mistreatment, lack of information, financial burden, and emotional challenges (10). Prior studies have demonstrated that transgender patients are considerably less represented in fertility clinic websites than same-sex couples (11, 12). As a result, transgender patients may be more likely to turn to alternative online resources such as social media platforms to seek information about fertility treatment options.

Given the known prevalence of health misinformation on social media, we aimed to examine the accuracy of articles on transgender fertility content most frequently shared on social media using qualitative and quantitative analyses. Researchers have previously published data using the online analytics tool BuzzSumo, including studies on social media engagement for male infertility content and misinformation regarding coronavirus disease 2019 (13, 14). We hypothesized that highly shared content on the topic of transgender fertility may not always be accurate or supported by scientific literature.

MATERIALS AND METHODS

The social media analytics module BuzzSumo was used to identify the top 10 article links with the highest online engagement using the key words “transgender fertility.” BuzzSumo allows users to search for the most shared content on a specific topic or domain and see how this shared content is divided among the social media platforms of Facebook, Pinterest, Reddit, and Twitter. Facebook engagements are defined as the “sum of reactions, comments, and shares,” and Reddit engagements include the “sum of upvotes and comments” (15). For Pinterest and Twitter, the total number of shares is used. This search was completed for the time periods from June 27, 2019, to June 26, 2020, and from June 27, 2020, to June 26, 2021, for comparison over a 2-year period. The search results were filtered based on articles in the English language, and all articles found to be related to transgender fertility were selected.

Two independent physicians (K.V. and M.R.) with training in obstetrics and gynecology categorized the article links as accurate or misleading. Misleading articles were defined as those containing both accurate and inaccurate information, including commentary that may misinform patients seeking information based on peer-reviewed scientific research or information inconsistent with the ASRM guidelines. Any discrepancies were resolved based on a consultation with the senior author (C.D.), a reproductive endocrinology and

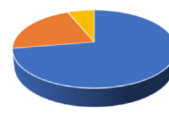
FIGURE 1

Engagement by Platform, 2019 - 2020



■ Facebook ■ Twitter ■ Pinterest ■ Reddit

Engagement by Platform, 2020 - 2021



■ Facebook ■ Twitter ■ Pinterest ■ Reddit

Total engagement by social platform.

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TABLE 2

Two-year comparison of the number of engagements in relation to article source and accuracy.

Article source	Total articles	Number of engagements	Misleading or inaccurate	Number of engagements	Accurate	Number of engagements
June 2019–June 2020						
Scientific peer-reviewed journal	3	188	0	0	3	188
News organization	4	4,504	1	1,700	3	2,804
Alternative media (e.g., blog or interview)	3	830	1	56	2	774
June 2020–June 2021						
Scientific peer-reviewed journal	2	69	0	0	2	69
News organization	3	1,296	0	0	3	1,296
Alternative media (e.g., blog or interview)	5	153	3	98	2	55

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infertility physician. This study was considered exempt from the institutional review board because it involved publicly available data and no human subjects.

RESULTS

The top 10 article links for each time period were examined and divided into 3 categories: scientific peer-reviewed journal, news organization website, and alternative media (e.g., blog or interview). The alternative media category contained majority (40%) of links for both the time periods, followed by the news organization (35%) and scientific peer-reviewed journal categories (25%). For articles that belonged to scientific peer-reviewed journals, accurate content predominated (100%), and the same trend was noted for articles that belonged to news organization websites (86%). Highly shared articles on alternative media websites had similar user engagement between accurate (50%) and misleading (50%) content (Table 1).

Facebook was the most popular platform for sharing transgender fertility content for both the time periods, with an average of 56 engagements per link in 2019–2020 and 17 engagements per link in 2020–2021. Facebook also accounted for the highest total number of engagements, followed by Twitter, Reddit, and Pinterest (Fig. 1).

Articles shared by news organizations had the highest number of total engagements (Table 2). Alternative media was the primary source of popular article links. For 2019–2020, 80% of the articles were graded as accurate and 20% as misleading or inaccurate. For 2020–2021, 70% of the articles were graded as accurate and 30% as misleading or inaccurate. Across both the time periods, 75% of the article links were accurate and 25% misleading. There was a significant association between the number of engagements with accurate articles and the time periods used for analysis ($P < .0001$). Further, it was likely that the number of engagements with accurate articles was higher in 2020–2021 than that in the year before.

Fourteen peer-reviewed research studies comprised primary citations used by 14 of the 20 total article links investigated (10, 16–28). Of the 14 studies, 3 were referenced more than once by the article links (Table 3). The types of studies included retrospective cohort studies, cross-sectional surveys, case-control studies, and review articles. All the studies, except for 2, were published in the United States. The average journal impact factor was 10.5, with a standard deviation of 18.1.

DISCUSSION

Transgender fertility is an emerging area of interest in the field of reproductive medicine. A significant proportion of the literature related to this topic has been published in the last decade, which may allow physicians to be more comfortable with addressing the reproductive needs of this population. Our BuzzSumo search demonstrated that majority of highly shared content on transgender fertility contains accurate information. Moreover, most of the top search results for both the time periods included references to scientific studies.

TABLE 3

Characteristics of studies referenced online.

Author and year of publication	Country of publication	Key finding	Study population and sample size	Frequency of study being referenced	Journal name	Impact factor
Leung et al. 2019 (16)	United States	FTM transgender patients may have positive ART outcomes even if testosterone therapy has already been initiated	FTM transgender (n = 126) and cisgender patients (n = 130)	2	<i>Fertility and Sterility</i>	6.3
Wierckx et al. 2011 (17)	England	Majority of FTM transgender patients desire to have children	FTM transgender patients (n = 50)	1	<i>Human Reproduction</i>	12.7
Pang et al. 2020 (18)	United States	MTF transgender patients may be more likely to preserve their fertility	AMAB (n = 53) and AFAB (n = 49) patients	2	<i>JAMA Pediatrics</i>	13.9
Rothenberg et al. 2019 (19)	United States	An FTM transgender patient underwent oocyte retrieval on GnRH agonist therapy	FTM transgender patient (n = 1)	1	<i>New England Journal of Medicine</i>	74.7
Turban et al. 2020 (20)	United States	Inverse association between treatment with pubertal suppression and lifetime suicidal ideation	Transgender adults (n = 619)	1	<i>Pediatrics</i>	5.4
Chen et al. 2017 (21)	United States	Rates of FP use among transgender youth are low	Transgender adolescents (n = 105)	1	<i>Journal of Adolescent Health</i>	3.9
Barnard et al. 2019 (22)	United States	Semen cryopreservation can be considered in patients in whom pubertal suppression has already been initiated	MTF transgender patients (n = 11)	2	<i>Pediatrics</i>	5.4
Cheng et al. 2019 (10)	United States	Transgender patients should be educated on fertility preservation options	N/A – review article	1	<i>Translational Andrology and Urology</i>	2.4
Lai et al. 2020 (23)	United States	Clinicians should consider various factors while counseling transgender adolescents on fertility	N/A – review article	1	<i>Journal of Adolescent Health</i>	3.9
Balayla et al. 2021 (24)	England	Importance of discussing ethical considerations with uterus transplantation	N/A – review article	2	<i>Bioethics</i>	1.7
Marsh et al. 2019 (25)	United States	Cryopreservation of sperm before hormone therapy is a viable preservation option for MTF transgender patients	MTF transgender (n = 22) and fertile cisgender male (n = 17) patients	1	<i>Journal of Assisted Reproduction and Genetics</i>	2.8
Kirubarajan et al. 2021 (26)	United States	LGBTQ+ individuals face unique barriers in fertility care	N/A – systematic review	1	<i>Fertility and Sterility</i>	6.3
De Sutter et al. 2002 (27)	United States	MTF transgender patients should be counseled on sperm cryopreservation	MTF transgender individuals (n = 121)	1	<i>International Journal of Transgenderism</i>	3.3
Nahata et al. 2018 (28)	United States	Rates of FP use among transgender youth are low	Transgender adolescents (n = 78)	1	<i>Journal of Adolescent Health</i>	3.9

Note: AFAB = assigned female at birth; AMAB = assigned male at birth; ART = assisted reproductive technology; FP = family planning; FTM = female-to-male; GnRH = gonadotropin-releasing hormone; LGBTQ+ = lesbian, gay, bisexual, transgender and queer; MTF = male-to-female; N/A = not available.

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Articles that were defined as misleading included those with highlighted key findings of research studies that did not comment on the limitations of those studies. For example, one of the top links from 2019–2020 was a news article that included interviews from 2 board-

certified reproductive endocrinologists and cited multiple peer-reviewed research studies (29). In contrast, another popular link from this time period featured a lay YouTube blogger stating that transgender women “may soon have babies” via uterus transplant (30). This headline might

be misinterpreted by online users and does not provide sufficient background information to understand a more complex issue. We found that the most popular content on transgender fertility in the last year was more accurate than that of the previous year, which suggests that there is a trend toward filtering out health misinformation online.

Transgender fertility may still be viewed as a topic with paucity of information, given its relatively lower number of overall shares than those of other topics such as male infertility (13). The top articles that generated interest covered a variety of topics, ranging from fertility preservation to the effects of hormone replacement therapy. This is important for transgender patients both with and without access to reproductive health care. Some articles may motivate transgender patients to seek additional information from their providers on topics that they may not have otherwise asked about. The most popular social media platform for sharing transgender fertility content is Facebook. This may be secondary to a higher number of monthly active users than other platforms (31). Facebook's versatility also allows users to respond to content in multiple ways, which further increases engagement.

There are some notable limitations to this study. Because of the methodology used, the social media platforms of Instagram, TikTok, and Snapchat were not included in the analysis because BuzzSumo does not track content or engagement for these websites. These data can be difficult to track because both Instagram and Snapchat include the feature of "stories," which makes some content inaccessible after 24 hours. Most analyses for engagement are performed on Facebook, which makes the findings of this study most applicable to this platform. Further, only 1 search term, "transgender fertility," was used for this analysis. Additional combinations of related terms, including "gender nonbinary," and even "transgender infertility," might have produced different results. Although our analysis demonstrated that some highly shared content might contain misleading information, internet users might also recognize that not all social media content contains reliable information. Further research is needed on patient attitudes toward social media content, particularly in the area of fertility.

CONCLUSIONS

Transgender fertility content on social media is shared on various platforms that are widely accessible to internet users and have varying degrees of accuracy. We found that majority of highly shared information on transgender fertility is accurate; moreover, the prevalence of shared accurate information has increased over time. The social media analytics module BuzzSumo can be used to help physicians better understand the content that internet users engage with on the topic of transgender fertility. This model can be expanded to other health care topics to assess for gaps in patient knowledge.

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