A Review of the Content and Format of Transgender-Related Webpages

Keith J. Horvath,
Division of Epidemiology and Community Health, University of Minnesota

Alex Iantaffi,
Division of Epidemiology and Community Health, University of Minnesota

Jeremy A. Grey, and
Division of Epidemiology and Community Health, University of Minnesota

Walter Bockting
Department of Family Medicine and Community Health, University of Minnesota

Abstract

Transgender persons represent a highly diverse group of individuals who have been historically underserved, despite being disproportionately at risk for HIV (human immunodeficiency virus) and other health conditions. Despite the need for more research on transgender health issues, no review of online transgender-related resources has been conducted. The purpose of this study was to broadly characterize (1) the types of transgender-related webpages that appear as a result of keyword searches, and (2) the extent to which webpages differ in content and format depending on whether the intended audience for the webpage was transgender individuals, health professionals, or the general population. An online search using 28 keywords yielded 204 eligible webpages, of which 58% targeted transgendered individuals, 23% targeted health professionals, and 39% targeted the general public. The highest percentage of webpages appeared to be operated and/or created by transgender individuals or groups (46%), followed by for-profit businesses (17%). The majority of mental health (80%), HIV-related (89%), and primary care (100%) webpages targeted health professionals. Although various features are available that may increase user interest in and perceived credibility of a webpage, the results show that many of these features were underutilized. There appears to be significant opportunity to develop web resources that directly target unique subgroups within the transgender community to improve their health outcomes, increase the visibility of features that increase user interest and perceived credibility of webpages, and possibly train transgender individuals to seek relevant online information.

The introduction and expansion of the Internet has revolutionized how individuals obtain health information and resources. It is estimated that 72% of adults in the United States use the Internet each day (Pew Internet & American Life Project, 2008a). Seeking medical information online is reported by 80% of Americans (Pew Internet & American Life Project, 2008b), which amounts to 8 million U.S. adults going online on a typical day to find information on various health topics (Fox, 2006). Despite the wide use of the Internet for health-seeking purposes, finding relevant information can be challenging. Online health information seekers often use incorrect terminology and misspell words during their online search (Bader & Theofanos, 2003; Peterson, Aslani & Williams, 2003; Skinner, Biscope,

Poland, & Goldberg, 2003), which can hinder access to pertinent information. In addition, the availability of online health information does not appear to be uniformly distributed across demographic characteristics and health condition status. For example, a recent review of HIV-related webpages found that although a number of webpages specifically targeted persons living with HIV, few specifically addressed the needs of persons of diverse genders, ages, or sexual orientations (Horvath et al., 2010). Understanding the availability and overall content and features for specific demographic groups provides critical understanding of gaps in resource delivery and areas of expansion for future online health promotion efforts.

The present study focused on the broad availability of online informational and health-related webpages for transgender individuals. Although comprising a small percentage of the population (estimated to be 0.2% of the population; Mathy, 2002b), transgender persons form a unique community with distinct norms and practices that differ from persons identifying as either exclusively male or female (Bockting, 1999; Valentine, 2007). Compared to individuals whose gender identity is congruent with his or her sex assigned at birth, transgender individuals have unique health information needs stemming from their specific physical and mental health concerns. For example, transgender endocrine therapy (i.e., hormone therapy) and sex reassignment surgery for the purpose of more closely aligning physical sex characteristics and psychological gender identity are unique to, and commonly sought among, transgender individuals (Bowman & Goldberg, 2006; Dahl, Feldman, Goldberg, & Jaberi, 2006). Despite their unique informational needs, health-related materials are often not culturally relevant for this population. As stated by Lombardi (2001):

> Simply adding transgender materials to existing materials is not enough, nor is using materials or programs originally created for other populations. Research, policies, and materials need to be culturally relevant and specific. The differences in identities, experiences, and physical form among transgender individuals relative to nontransgender populations create very different needs and strategies, and efforts must be directed toward the actual experiences of transgender people. (p. 870)

Therefore, a greater understanding of health resources that consider the unique experiences of transgender persons is critical for the development and adoption of health messages for and among transgender groups.

Studies show that transgender individuals are disproportionately at risk for physical and mental health complications (Kenagy, 2005; Meyer, 2001). For example, a recent review of HIV risk behavior among transgender persons in the United States found that approximately 28% were infected with HIV and 21% were infected with other sexually transmitted infections, with highest rates of infection among transgender women of color (Herbst et al., 2008). In addition, studies of transgender samples show high rates of depression (44%) and anxiety (33%; Bockting et al., 2010), tobacco use (48% among female-to-male and 36% among male-to-female; Ott et al., 2010), and illicit drug (27%) and hormone (34%) use (Herbst et al., 2008). In spite of these concerns, limited availability of transgender-appropriate medical coverage and services persists (Hoffman, Freeman, & Swann, 2009; Lombardi, 2001; Lombardi & Davis, 2006; Rachlin, Green, & Lombardi, 2008), and some transgender persons report that they were denied medical services based on their gender identity (Kenagy, 2005). Negative experiences in traditional health care settings, as well as evidence of stigma and discrimination in other settings, make the Internet an attractive source for health information, social support, and other transgender-related resources. Studies demonstrate that many transgender-identified individuals were early and enthusiastic adopters of the Internet (e.g., Shapiro, 2003); however, no studies have evaluated the availability of interactive online resources for this population.

Toward this end, we attempted in this study to begin to fill an important gap in understanding the availability, overall content, and features of interactive online transgender resources by answering the following research questions:

1. What type of content appears in transgender-related webpages as a result of keyword searches?

2. To what extent do webpages differ in their content and features as a function of the intended primary audience (i.e., transgender individuals, health professionals or the general population)?

METHODS

Study Design

This study was conducted as part of a larger study to design and evaluate an online HIV prevention intervention for transgender people and their partners. In this online review of transgender webpages, we sought to characterize interactive transgender websites (defined as those that have links or other interactive features for users) to assess the current state of interactive resources for this population. Because the data reported here were accessed through publicly available records, human subjects approval was not required. Definitions used in this study were adapted from a previous analyses of HIV-related webpages (Horvath et al., 2010).

Search Strategy

Using "transgender" as the root term, we applied the Google Search-based Keyword Tool to generate a set of initial search terms (shown in Table 1). This list was augmented by additional keywords relevant to our study's goals (e.g., transgender resources, transgender health, and transgender HIV). These additional keywords were chosen by the investigators and cross-validated by the study's community advisory board, composed of members of the target population and transgender health experts.

Keyword searches were conducted at variable times between December 17, 2008, and February 3, 2009. This extended timeline was dictated by the researchers' capacity while also engaging in a larger project and we acknowledge that it is a limitation of this study. We entered each keyword separately into the Google search engine (http://www.google.com) to generate a list of links to related webpages. For each keyword or phrase, we subsequently examined the first two pages of search results. We chose to limit the number of search results pages based on prior research showing that less than half of Internet information seekers look at the second page of search results and fewer actually click on links on the second page of search results (Eysenbach & Kohler, 2002). In the same study, 97.2% of 289 clicks by participants were on a link that was within the first 10 search results (Eysenbach & Kohler, 2002). Therefore, we believed that examining the first two pages of search results reflects what most people conducting such searches would view. We used Google to perform our keyword searches, because it accounts for 58–65% of the market for web searches (Klaassen, 2007). All search page results were saved so that a separate coder could access the same web links, and cached pages if necessary, at a later date to calculate intercoder reliability.

Exclusion Criteria

All webpages were examined and excluded from full coding if the webpage was a Wikipedia article, Google book, or image or video file; was a stand-alone article (e.g., newspaper article, press release) that did not contain links to outside sources and therefore did not resemble an interactive website; was a list of links to other websites, without any of

its own interactive content (e.g., directories); did not contain any transgender-specific information; contained content of a pornographic nature; was not in English; or had already been coded and therefore was considered a duplicate. The percentages of webpages excluded for these reasons are shown later, in the Results section.

Webpage Coding

All webpages were coded by a postdoctoral level research staff member (AI), supervised by the principal investigator (WB) and a co-investigator (KH) experienced in developing and coding online webpages. We coded only the specific webpage (single screen of a larger website) identified from the keyword search based on a prior study showing that Internet searchers typically remain on a website for a median of 39 seconds and rarely go past the first webpage of information (rather, seekers tend to rephrase their key word search and search again; Eysenbach & Köhler, 2002). Although deep analysis of all of the content for each website may provide further insights into online transgender resources, we chose to understand what users are most likely to view in their search to increase its real-world application. However, we did examine the broader website to determine (a) who operated or created the website and (b) the overall purpose of the website (as opposed to the primary content on the specific webpage). Based on our experience as we developed and refined the coding scheme, we identified the primary target audiences for transgender-related websites as being either transgender individuals (i.e., persons who self-identify as transgender; e.g., http://cdspub.com/cope01.html and ftmalliance.org), health professionals (i.e., physicians, nurses, mental health professionals; e.g., http://tgtrain.org and wpath.org), general public (i.e., no specific target audience but typically information for layperson to understand transgender identities; e.g., http://athealth.com/consumer/Disorders/GenderIden.html and http://goarticles.com/article/TG-Personals-A-Guide-To-Transgender-Personals/667507), people who know a transgender person (i.e., family members or spouses; e.g., http://www.critpath.org/pflag-talk/tgKIDfaq.html and http://www.cdspub.com/cope.html), or other professionals (i.e., educators and lawyers; e.g., http://www.transgenderlawcenter.org/pdf/Health%20Law%20fact%20sheet.pdf and http://www.theincdc.org). We did not code advertisements on the periphery (typically found on the right side of the page) but did code the sponsored links that appeared at the beginning of the search results list. Eligible webpages were fully coded by using the categories and coding options shown in the appendix. Coding options were mutually exclusive within categories to provide a reliable method for establishing intercoder reliability and to make comparisons within categories. Furthermore, although we acknowledge that some categories could have multiple response options (e.g., website purpose), establishing the primary response option in each category yields insights into the overall nature of interactive transgender resources across webpages.

A random sample of 20% of webpages that met inclusion for full coding was coded by a different author (JG) who was familiar with the coding scheme to establish inter-coder reliability. During the initial coding, the coders did not discuss their codes so that they could arrive at independent decisions. After both coders had completed their initial coding, they met to compare codes and resolve discrepancies by discussion. During this process, coders returned to the saved webpages to identify whether discrepancies occurred as a result of changes to a webpage between the two coding periods. The database was changed to reflect the agreed upon codes for each category. Because only one response option was allowed per coding category, the percent agreement was calculated as the number of times both coders chose the same response option divided by the total number of webpages coded. Percent agreement ranged from 83% (for whether and when the webpage was updated) to 100%, with reliability in excess of 90% for most coding categories. Kappa coefficients (Cohen, 1960) ranged from 0.69 to 1.00, with all but two categories above 0.80 (see the appendix for percent agreement and kappa statistics for each category).

Statistical Analyses

Because one aim of this study was to examine ways in which transgender-related webpages differed in content and format by their intended audience, group comparisons are made between webpages targeting transgender individuals, health professionals, and the general public (as defined earlier). Because only a few webpages were coded as targeting "people who know a transgender person" ($n = 4$) and "other professional" ($n = 2$), these webpages were recoded as "General" and "Health Professionals," respectively. Group summary statistics (frequencies, percentages, means, medians) are presented for overall webpage findings and by target audience. Nonparametric tests (chi-squared and Fisher's exact test) were used to explore proportional differences in perceived credibility elements and webpage features. Data were analyzed by using the statistical package STATA, version 9.2.

RESULTS

The 28 key words yielded 589 unique webpages within our search results. Of these, 385 (65%) were excluded from full coding because the webpage was a Wikipedia article ($n = 21$), Google book ($n = 15$), or image or video file ($n = 42$); was a stand-alone article ($n = 36$); was a list of links to other websites ($n = 38$); did not contain any transgender-specific information ($n = 125$); contained content of a pornographic nature ($n = 64$); or had already been coded and therefore was considered a duplicate ($n = 44$). Although we were prepared to make additional exclusions for non-English webpages, none were encountered (although this was obviously due in part to the fact that we did not use search terms that were in languages other than English, since we were primarily interested in resources for transgender persons in the United States). The remaining 204 webpages were fully coded. Sixty-five (32%) of these were paid advertisements.

Webpage Yield by Keyword and Target Audience

Table 1 shows the number of webpages that were fully coded for each keyword search term for all webpages and by webpages target audience. As shown in the second row of the table, 58% of the 204 total webpages were targeted toward transgendered individuals, 23% toward health professionals, and 39% toward the general public.

Keywords were grouped to the five subcategories (e.g., "General", "Health/HIV") for ease of comparison. Overall, the greatest percentage of webpages appeared for searches conducted with "general" keywords (33%), followed by keywords related to health and HIV (24%), identity (19%), social networking (16%), and body modification (8%). With the exception of the Health/HIV subcategory, the greatest percentage of webpages within each subcategory appeared to target transgender individuals. For example, 82% of the webpages that arose from "Identity" keywords (e.g., FTM; transsexual) targeted transgender individuals, as did 70% of "Social Networking" keywords, 63% of "General" keywords, and 56% of "Body Modification" keywords. In contrast, 69% of webpages from searches conducted with keywords that included "health'" or "'HIV" targeted health professionals.

Website Operators/Creators

Data on the websites' operators/creators are presented in Table 2. Nearly half of all transgender-related websites were operated by individuals or groups of people not affiliated with a recognizable organization (47%), followed by websites operated by for-profit businesses (17%) and national (10%) and city/state (8%) community-based organizations. Five percent or fewer of the websites appeared to be operated/created by a health department, university, or professional organization. However, most websites operated/created by health departments (82%), a university (80%), or a professional organization (100%) appeared to target health professionals.

Website Purpose

Coding results for the overall website purpose are shown in Table 3. The highest percentage of websites were coded as educational (46%), followed by personal expression (13%), transgender advocacy (12%), and sales of transgender-related products (12%). Less than 10% of web-sites were coded as primarily having a social networking, sex/romance, or intervention purpose. The greatest percentage of educational websites tended to target health professionals (45%). Transgender individuals were the primary target of websites with the primary purpose of social networking (100%), sales (92%), advocacy (84%), sex and romance (75%), and personal expression (69%).

Webpage Content

Webpages coded as primarily containing particular content are shown in Table 4. Overall, nearly three-quarters of all webpages were coded as primarily containing content regarding community resources (41%), HIV (17%) and definitions of transgenderism (16%). All other primary webpage content categories constituted less than 10% of the webpages.

Half or more of webpages whose primary content presented or addressed community resources (88%), body modification (71%), sexual health (100%), discrimination/stigma (50%), law/politics (50%), transgender-related products (95%), and employment (100%) targeted transgender persons. However, health professionals were the primary target audience for webpages whose primary content focused on HIV (89%), mental health (80%), and primary care (100%). Webpages that appeared to primarily provide content on definitions of transgenderism tended to target the general population (58%).

Perceived Credibility of the Webpage

Although assessing the accuracy of information provided on each webpage was beyond the scope of this study, we did code features that we believed would increase perception of a webpage's credibility (for example, we considered webpages updated in the past year to be more credible than those updated more than one year ago or without any indication of updating; see Table 5). Overall, 94% of webpages contained at least one feature that increased their credibility. Fifty-eight percent of webpages contained only one credibility indicator, with 33% having two, and 2% containing three credibility indicators. Nearly half of all webpages belonged to websites owned and/or operated by transgender individual(s) (45%), and 40% of webpages had been reviewed by an expert in the field. Most (83%) of the webpages provided a date when they were last updated; 44% had been updated in the past year. Three webpages (1%) included an "Ask the Expert" feature or contained a certificate of trustworthiness (e.g., Health on the Net [HON] Code) to indicate it contained credible health information. In addition to these overall findings, statistically significant differences in features of perceived credibility by target audience are shown in Table 5.

Webpage Features

Features of webpages for the total number of webpages and by target audience are shown in Table 6. The most common features included pictures (67%), forums (16%), animation (16%), and chatrooms (13%). Less common features were video (9%), non-English text (6%), polls (2%), and podcasts (1%). Tests of proportions showed that a lower percentage of webpages targeting health professionals (32%) contained pictures than those targeting transgender individuals (76%) or the general public (82%). Likewise webpages targeting health professionals were less likely to contain forums (0% vs. 19% of transgender individual-targeted webpages vs. 28% of general public-targeted webpages), animation (4% vs. 19% vs. 21%, respectively), and videos (0% vs. 12% vs. 13%, respectively).

DISCUSSION

The results support three main conclusions that have practical applications for existing transgender-related websites, as well as the development of future online transgender-related resources. First, as shown in Table 2, transgender individuals and groups appear to be very actively involved in creating websites that primarily target other members of the transgender community. Incorporating the perspective of individuals from the transgender community potentially has both positive and negative implications for transgender-related websites and its users. On the one hand, it may be critical to include the perspective of persons from the transgender community to maximize user interest in the website and its overall acceptability by the transgender community. Greater engagement with the transgender community has been advocated in at least one prior review of transgender-related research (Lombardi, 2001). This approach may increase the relevance of the information presented and foster the investment of individuals within their community. On the other hand, webpages developed by individuals or groups within the community may possibly present inaccurate health information to members of the community. For example, in a similar study of online HIV-related webpages, a website that promoted the treatment of HIV by discontinuing antiretroviral medication emerged during a keyword search (Horvath et al., 2010). Given the complexity of health and medical treatment for transgender individuals and the ability for anyone to create a website, the possibility for misinformation shared by members of the community would seem to be cause for concern.

The second main finding from these results is that although prior studies indicate that transgender persons are disproportionately affected by HIV and other health concerns (Herbst et al., 2008; Lombardi & Davis, 2006; Mathy, 2002a, 2002b), a majority of health and HIV-related webpages appeared to target health professionals (as shown in Tables 1 and 4). This finding may arise from two possible reasons. First, many HIV and health webpages may target health professionals because prior studies demonstrate that there is a lack of qualified health professionals to care for the needs of individuals within the transgender community (e.g., Rachlin, Green, & Lombardi, 2008). Second, it may be that creating online HIV and health content for the transgender community is difficult, given that it is a very diverse community, with different segments having uniquely different health concerns. Thus, there appears to be significant opportunity to develop web resources that directly target unique subgroups within the transgender community to improve their health outcomes.

Finally, we believe an important finding was that although a variety of features could be included on a webpage to increase user interest in and perceived credibility of a webpage, it appears that many of these features are underutilized in current transgender-related webpages (as shown in Tables 5 and 6). Website developers might consider including a variety of features as they build webpages that increase both the perceived credibility and interest in the website. These may include updating the webpage regularly and posting the date on the webpage, seeking a certification of trustworthy health information (e.g., HON certification), and incorporating videos, non-English options, polls, and podcasts.

Study Limitations

Several limitations of this study should be noted. First, we restricted the keyword search to the most commonly used search engine, limited our analyses to webpages from the first two pages of search results, and did not perform a deep content analysis of the entire website to which the webpage belonged. Thus, the results do not represent all transgender-related webpages, nor do they represent a deep content analysis of a subset of transgender web-sites. Moreover, we acknowledge that webpages could be coded on a number of other dimensions (e.g., accuracy of the information), and therefore future website evaluations of

transgender webpages may wish to consider coding categories beyond those considered here. Second, because webpages (and in fact entire websites) are continually added, removed, and modified over time, these results may not be representative of transgender-related webpages at a different point in time. It may be important to replicate these analyses in the future to update understanding of the state of online transgender resources and the technologies being used. Third, although we developed the list of search terms with the Google Search-based Keyword Tool, there may be other widely used search terms that were not included in these analyses. It would also be useful to see this study replicated using search terms in languages other than English. In spite of these limitations, the study provides an important initial overview of the types of webpages that are likely to result from transgender-related keyword searches, as well as recommendations for future directions in the area of transgender health.

Implications and Future Directions

In addition to the recommendations already described, the results hold the following implications for transgender persons seeking health information and future research possibilities. Given that none of the webpages targeting transgender individuals included obvious indicators of credible health information (e.g., HON Code), the overall health of the transgender community may be improved by teaching community members how to seek and identify credible information regarding their identity, health, and medical options. Online health information-seeking interventions have proven successful with persons living with HIV (Kalichman, Cherry, Cain, Pope, et al., 2006; Kalichman, Cherry, Cain, Weinhardt, et al., 2006; Kalichman, Weinhardt, Benotsch, & Cherry, 2002), and could be adapted to assist transgender persons in successfully seeking and evaluating health information. In addition, future studies should be designed to understand how transgender persons seek out relevant information and the degree to which existing transgender websites provide up-to-date and accurate information.

Acknowledgments

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APPENDIX: CODING CATEGORIES AND CODING OPTIONS

What search term did you use to find this webpage? (Keyword)

Options: Trans, transgender health, transgender resources, transgender HIV treatment, transgender HIV prevention, transgender HIV, MtF, FtM, ladyboy, TGirl, Gender identity, tranny, gender reassignment, Drag queen, Cross dresser, Transvestite pics, Transvestite chat, Transvestite stories, TG Chat, TG transformation, transgender, TG personals, TG stories, Transsexuals, Transvestite, TG, cross dressing, transgendered

Percent agreement: 98%

Kappa: 0.98

Is the webpage …

Options: transgender-specific, health-related, gay, lesbian, bisexual and transgender (GLBT)-related, other (specify)

Percent agreement: 95%

Kappa: 0.94

If the website is health-related, GLBT-related, or other, does it have TG content? [used to determine inclusion/exclusion of webpage from full analysis]

Options: no, yes, n/a

Percent agreement: 96%

Kappa: 0.94

Is this page a(n) … [used to determine inclusion/exclusion of webpage from full analysis]

Options: image file, newspaper article or news report, Google book, webpage of links to other sites, journal article or conference abstract, conference presentation, YouTube video, Wikipedia article, pornographic website, none of the above

Percent agreement: 98%

Kappa: 0.97

Is the result the site's homepage or another page?

Options: another page, homepage

Percent agreement: 100%

Kappa: 1.00

Who operates the website?

Options: unable to identify, national community-based organization, city, state, or federal health department, city-or state-wide community-based organization, university-affiliated department, professional organization, for-profit corporation, individual or group of individuals

Percent agreement: 100%

Kappa: 1.00

Is there any indication of the date that the webpage was last updated?

Options: no, yes (date was within the past year), yes (date was more than one year ago)

Percent agreement: 83%

Kappa: 0.69

Is the webpage sponsored? [i.e., paid advertisement]

Options: no, yes

Percent agreement: 100%

Kappa: 1.00

Did the webpage have the following indicators of credibility?

1. ask the expert	*Percent agreement*: 100%, *kappa*: 1.00
2. reviewed by an expert	*Percent agreement*: 97%, *kappa*: 0.93
3. certificate of credibility (e.g., HON code)	*Percent agreement*: 100%, *kappa*: 1.00
4. transgender owned or operated	*Percent agreement*: 100%, *kappa*: 1.00

Options: no, yes

Is the information mostly about …

Options: community resources, definitions of transgenderism, discrimination/stigma, sexual health, mental health, primary care (access), body modification (hormones, surgery), employment, HIV/AIDS/STIs, products, laws/policies

Percent agreement: 97%

Kappa: 0.96

Who is the target audience of the webpage? (choose one)

Options: transgender individuals, health professionals, general public, people who know a transgender person, other professionals

Percent agreement: 100%

Kappa: 1.00

What is the primary purpose of the website?

Options: education, advocacy, intervention, sales, personal expression, sex/romance seeking, social networking, other (specify)

Percent agreement: 100%

Kappa: 1.00

Does the webpage have the following features?

1. pictures	*Percent agreement*: 100%, *kappa*: 1.00
2. animation	*Percent agreement*: 94%, *kappa*: 0.77
3. videos	*Percent agreement*: 100%, *kappa*: 1.00
4. games	*Percent agreement*: 100%, *kappa*: 1.00
5. polls	*Percent agreement*: 97%, *kappa*: 0.84
6. podcasts	*Percent agreement*: 100%, *kappa*: 1.00
7. cell phone/text capabilities	*Percent agreement*: 100%, *kappa*: 1.00
8. chatrooms	*Percent agreement*: 97%, *kappa*: 0.82
9. discussion boards/forums	*Percent agreement*: 94%, *kappa*: 0.82
10. non-English version	*Percent agreement*: 100%, *kappa*: 1.00

Options: no, yes

TABLE 1

Number of Webpages (Total Webpages and by Target Audience) Generated by Different Keyword Search Terms

Keyword Search Term	Total, n	Transgender Individuals, n (%)[a]	Health Professionals, n (%)[a]	General Public, n (%)[a]
Total	204	118 (58)	47 (23)	39 (19)
General				
Gender identity	18	4 (22)	6 (33)	8 (45)
Cross dressing	13	10 (77)	1 (8)	2 (15)
Transgendered	11	9 (82)	1 (9)	1 (9)
Transgender	11	9 (82)	1 (9)	1 (9)
Transgender resources	8	4 (50)	2 (25)	2 (25)
TG	6	6 (100)	0 (0)	0 (0)
Trans	1	1 (100)	0 (0)	0 (0)
Subtotal	68[b] (33%[c])	43 (63)	11 (16)	14 (21)
Health/HIV				
Transgender HIV	18	2 (11)	14 (78)	2 (11)
Transgender HIV prevention	12	0 (0)	12 (100)	0 (0)
Transgender health	11	8 (73)	2 (18)	1 (9)
Transgender HIV treatment	7	1 (14)	5 (71)	1 (14)
Subtotal	48 (24%)	11 (23)	33 (69)	4 (8)
Identity				
FTM	14	13 (93)	0 (0)	1 (7)
Transsexual	8	5 (63)	2 (25)	1 (13)
Cross dresser	7	6 (86)	0 (0)	1 (14)
Drag queen	5	3 (60)	0 (0)	2 (40)
Tgirl	3	3 (100)	0 (0)	0 (0)
MTF	1	1 (100)	0 (0)	0 (0)
Transvestite	1	1 (100)	0 (0)	0 (0)
Subtotal	39 (19%)	32 (82)	2 (5)	5 (13)
Body modification				
Gender reassignment	12	6 (50)	0 (0)	6 (50)
TG transformation	4	3 (75)	0 (0)	1 (25)
Subtotal	16 (8%)	9 (56)	0 (0)	7 (44)
Social networking				
Transvestite chat	8	6 (75)	0 (0)	2 (25)
TG stories	7	7 (100)	0 (0)	0 (0)
TG chat	6	5 (83)	0 (0)	1 (17)
TG personals	6	4 (67)	0 (0)	2 (33)
Transvestite stories	5	0 (0)	1 (20)	4 (80)
Transvestite pics	1	1 (100)	0 (0)	0 (0)
Subtotal	33 (16%)	23 (70)	1 (3)	9 (28)

[a]Row total.

[b]Column total.

[c]Percentage of total webpages.

TABLE 2

Website Operators/Creators for Total Webpages and by Target Audience

Operators/Creators	Total, n (%)[a]	Transgender Individuals, n (%)[b]	Health Professionals, n (%)[b]	General, n (%)[b]
Individual/group	95 (47)	79 (83)	4 (4)	12 (13)
For-profit business	35 (17)	10 (29)	5 (14)	20 (57)
National CBO[c]	21 (10)	9 (43)	9 (43)	3 (14)
City/state CBO	17 (8)	13 (76)	3 (18)	1 (6)
Health department	11 (5)	1 (9)	9 (82)	1 (9)
University-affiliated	10 (5)	1 (10)	8 (80)	1 (10)
Professional organization	8 (4)	0 (0)	8 (100)	0 (0)
Undetermined	7 (3)	5 (71)	1 (14)	1 (14)
Total	204	118 (58)	47 (23)	39 (19)

[a] Percentage of column total.

[b] Row total.

[c] Community-based organization.

TABLE 3

Overall Website Purpose for Total Webpages and by Target Audience

Website Purpose	Total, n (%)[a]	Transgender Individuals, n (%)[b]	Health Professionals, n (%)[b]	General, n (%)[b]
Education	94 (46)	26 (28)	42 (45)	26 (28)
Personal expression	26 (13)	18 (69)	1 (4)	7 (27)
Advocacy	25 (12)	21 (84)	2 (8)	2 (8)
Sales	25 (12)	23 (92)	1 (4)	1 (4)
Social networking	20 (10)	20 (100)	0 (0)	0 (0)
Sex/romance seeking	12 (6)	9 (75)	0 (0)	3 (25)
Intervention	1 (<1)	0 (0)	1 (100)	0 (0)
Other	1 (<1)	1 (100)	0 (0)	0 (0)
Total	204	118 (58)	47 (23)	39 (19)

[a]Percentage of column total.

[b]Row total.

TABLE 4

Primary Content of Webpage for Total Webpages and by Target Audience

Primary Webpage Content	Total, n (%)[a]	Transgender Individuals, n (%)[b]	Health Professionals, n (%)[b]	General, n (%)[b]
Community resources	83 (41)	73 (88)	0 (0)	10 (12)
Health				
HIV	35 (17)	1 (3)	31 (89)	3 (9)
Body modification	17 (8)	12 (71)	1 (6)	4 (24)
Mental health	5 (2)	1 (20)	4 (80)	0 (0)
Primary care	1 (<1)	0 (0)	1 (100)	0 (0)
Sexual health	1 (<1)	1 (100)	0 (0)	0 (0)
Legal				
Discrimination/stigma	4 (2)	2 (50)	1 (25)	1 (25)
Law/politics	4 (2)	2 (50)	1 (25)	1 (25)
Other				
Definitions	33 (16)	6 (18)	8 (24)	19 (58)
Products	19 (9)	18 (95)	0 (0)	1 (5)
Employment	2 (<1)	2 (100)	0 (0)	0 (0)
Total	205	118 (58)	47 (23)	39 (19)

[a] Percentage of column total.

[b] Row total.

TABLE 5

Features That Increase the Perceived Credibility of Transgender-Related Webpages, for Total Webpages and by Target Audience

Perceived Credibility Feature	Total (n = 204), n (col %)	Transgender Individuals (n = 118), n (col %)	Health Professionals (n = 47), n (col %)	General (n = 39), n (col %)	p Value
Transgender owned/operated	92 (45)	79 (67)	3 (6)	10 (26)	.000
Reviewed by expert	81 (40)	19 (16)	47 (100)	15 (39)	.000
Ask the expert	3 (1)	2 (2)	0 (0)	1 (3)	.767
Certificate of Trustworthiness	3 (1)	0 (0)	0 (0)	3 (8)	.007
Updated:					.000
No update	34 (17)	27 (23)	3 (6)	4 (10)	
Past year	90 (44)	58 (49)	13 (28)	19 (49)	
More than a year	80 (39)	33 (28)	31 (66)	16 (41)	

TABLE 6

Features of Transgender-Related Webpages, for Total Webpages and by Target Audience

Webpage Feature	Total (n = 204), n (col %)	Transgender Individuals (n = 118), n (col %)	Health Professionals (n = 47), n (col %)	General (n = 39), n (col %)	p Value
Pictures	137 (67)	90 (76)	15 (32)	32 (82)	.000
Forums	33 (16)	22 (19)	0 (0)	11 (28)	.000
Animation	32 (16)	22 (19)	2 (4)	8 (21)	.030
Chatroom	26 (13)	24 (20)	0 (0)	2 (5)	.000
Video	19 (9)	14 (12)	0 (0)	5 (13)	.017
Non-English language	13 (6)	11 (9)	0 (0)	2 (5)	.059
Polls	4 (2)	1 (<1)	0 (0)	3 (8)	.046
Podcasts	2 (1)	1 (<1)	1 (2)	0	.667
Games	0 (0)	0 (0)	0 (0)	0 (0)	—