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Impact of a Health Communication Campaign on Uptake of Contraceptive Services during the 2016–2017 Zika Virus Outbreak in Puerto Rico

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Abstract

The Zika Contraception Access Network (Z-CAN) was established during the 2016–2017 Zika virus outbreak in Puerto Rico as a short-term emergency response program providing client-centered contraceptive counseling and same-day access to the full range of reversible contraceptive methods at no cost to women wishing to delay pregnancy. An evidence-based communication campaign, Ante La Duda, Pregunta (ALDP), was launched to encourage utilization of Z-CAN services. We assessed the effectiveness of campaign tactics in increasing awareness of Z-CAN among women in Puerto Rico. Data on campaign exposure and awareness were obtained through a self-administered online survey approximately two weeks after an initial Z-CAN visit, while the number of searches for participating clinics were obtained from monitoring the campaign website. Findings demonstrated that the most common ways survey respondents learned about Z-CAN were through friends or family (38.3%), social media (23.9%), a clinical encounter (12.7%), and website (11.7%). Nearly two-thirds (61.1%) of respondents had heard of the ALDP campaign. Over the campaign's duration, there were 27,273 searches for Z-CAN clinics. Findings suggest that evidence-based communication campaigns may increase awareness of needed public health services during emergencies. Word of mouth, social media, and digital engagement may be appropriate communication tactics for emergency response mobilization.

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Introduction

Zika infection during pregnancy can cause severe brain abnormalities in infants, including microcephaly and eye defects (Olson et al., 2019). Increasing access to contraception to prevent unintended pregnancies was used as a medical countermeasure in Puerto Rico during the 2016–2017 Zika virus outbreak to mitigate potential Zika virus-associated adverse pregnancy and birth outcomes (Romero et al., 2018).

During the 2016–2017 Zika virus outbreak, approximately one in ten pregnant women in the United States (US) with confirmed Zika virus infection had a fetus or baby with birth defects (Reynolds et al., 2017). Puerto Rico had the highest number of Zika virus infections in the US and its territories, including the highest number of Zika-positive pregnant women (Lozier et al., 2016). Before the Zika outbreak, it was estimated that 65% of pregnancies in Puerto Rico were unintended compared with the US overall (51%) (Tepper et al., 2016), and approximately 138,000 of the 715,000 Puerto Rican women of childbearing age (15–44 years) did not desire pregnancy and were not using a most or moderately effective[1] contraceptive method (Tepper et al., 2016). Prior to the Zika virus outbreak, women in Puerto Rico faced many challenges accessing contraception, including high out-of-pocket costs, limited availability of the full range of reversible contraceptive methods, lack of patient knowledge of contraceptive methods, and logistical barriers that limited access to same-day contraception (Tepper et al., 2016).

In response to the 2016–2017 Zika virus outbreak in Puerto Rico, the National Foundation for the Centers for Disease Control and Prevention (CDC Foundation), with technical assistance from the US Centers for Disease Control and Prevention (CDC) and local partners, established the Zika Contraception Access Network (Z-CAN) to reduce Zika-related pregnancy and birth outcomes by preventing unintended pregnancies among women who chose to prevent pregnancy during the Zika virus outbreak (Lathrop et al., 2018; Romero et al., 2018). The Z-CAN program was designed as a short-term emergency response intervention to provide client-centered contraceptive counseling and same-day access to the full range of reversible contraceptive methods at no cost through a network of 153 trained physicians who implemented services at 139 clinics across all public health regions in Puerto Rico. Between May 2016-September 2017, 29,221 women received Z-CAN services (Lathrop et al., 2020). Evaluation findings of the Z-CAN program have been published elsewhere (Lathrop et al., 2020; Tepper et al., 2020; Zapata et al., 2020).

To facilitate increased awareness and uptake of contraceptive services provided through Z-CAN, an evidence-based, multi-strategy health communication campaign was developed and launched online in November 2016 and remained active through the end of the Z-CAN program (Table 1). The campaign, “Ante La Duda, Pregunta” (ALDP), translated in English to “When in Doubt, Ask,” served as a call to action for women to ask their health care provider questions about different contraceptive methods and Z-CAN services. As an evidence-based campaign, messaging, channels, and strategies were based on formative

[1]. Most effective = sterilization, intrauterine device, or contraceptive implant; moderately effective = injectable contraceptive, oral contraceptive, contraceptive patch, or contraceptive vaginal ring.

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research conducted in Puerto Rico (August et al., 2020), as well as constructs from the Theory of Planned Behavior (TPB) and tenets of social marketing (Powell et al., 2020). The objectives of the ALDP campaign were to increase information-seeking behaviors related to contraception use among women of reproductive age in Puerto Rico and to increase utilization of Z-CAN services (August et al., 2020; Powell et al., 2018).

One of ALDP's primary strategies was to encourage information seeking about the Z-CAN program and increase knowledge of clinics where Z-CAN services were available by directing individuals to the campaign website. The ALDP website provided information on various contraception resources and an overview of the Z-CAN program. The ALDP website featured a clinic finder tool, which allowed women to search for Z-CAN clinics by zip code or city, connecting them to local services. Campaign materials, including posters, postcards, brochures, and videos, directed individuals to the campaign website. Print campaign resources were distributed at community events, such as health fairs and festivals, whereas campaign videos were disseminated through social media and digital advertisements, all of which linked to the campaign website. In addition, community engagement events and radio public service announcements (PSAs) were utilized to disseminate campaign messages.

The purpose of the current study was to assess the effectiveness of the tactics utilized during an evidence-based communication intervention to support an emergency response. In particular, we sought to evaluate the extent to which women who received services through Z-CAN may have learned of those services through the ALDP campaign. We assessed awareness of the Z-CAN program and exposure to the ALDP campaign through multiple communication tactics, including social media and digital engagement, print materials, and community events.

Methods

Campaign exposure data

Women aged ≥18 years who participated in the Z-CAN program were invited on a rolling basis to complete a 10-minute self-administered online survey approximately two weeks after their initial Z-CAN visit until approximately 3,200 responses were received. Data were collected from October 2016 to July 2017. Women were informed of the survey at the time of Z-CAN enrollment and given the opportunity to opt out of being contacted to participate. Women who did not opt out were invited to participate via e-mail or text message based on their preferred mode of communication. The survey was administered in Spanish using Survey Monkey online software. No personal identifying information was collected on the patient satisfaction survey. Rather, unique identification numbers assigned at the initial Z-CAN visit were used to merge survey responses with de-identified aggregate clinical encounter data (e.g., clinic type, patient demographic characteristics). Respondents received a 10 USD electronic gift card as a token of appreciation. The CDC determined the survey to be non-research public health practice and thus did not require Institutional Review Board review.

Of 9,834 women invited to participate, 3,503 (36%) responded. Survey respondents differed from non-respondents on several characteristics. Respondents were slightly older and

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more educated, relative to non-respondents (Zapata et al., 2020). Furthermore, a smaller proportion of women with public insurance and those who received services at a federally-funded community health center (CHC) responded to the survey, compared with women with no health insurance or private insurance and those who received services in a private, academic, or public health clinic (Zapata et al., 2020). Nearly all (>98%) of survey respondents were invited to participate in the survey as intended, approximately two weeks after their initial Z-CAN visit.

The survey asked participants, "Prior to your Z-CAN visit, how did you first hear about the Z-CAN program?," to determine how women may have been exposed to messaging regarding Z-CAN. Women could select any (or all) applicable response options: radio; TV; website; social media (e.g., Facebook, Twitter, Instagram); print materials (e.g., poster, flyer, brochure); community event; friend/family; and other. Respondents answering other were given the opportunity to write in a response; some responses were recoded into existing options and one new response option was added (i.e., clinical encounter). In late January 2017, approximately three months after the ALDP campaign was implemented, a new question was added to the survey (N = 2,491). Women were asked "Have you heard of the *Ante la Duda, Pregunta* Campaign?," which captures their awareness or exposure to the campaign. Women could answer yes or no.

Clinic location search data

The ALDP campaign website included a search function via Google maps that allowed people to input a zip code or a city in order to generate a list of Z-CAN clinics closest to the provided location. Along with the name of the clinic, the address and phone number would also appear. Data on Z-CAN clinic location searches were obtained from Google Analytics. These data were available monthly for each city for the life of the campaign (November 2016 through September 2017) for a total of 11 months.

Analytic approach

We assessed the proportions of respondents who reported first hearing about the Z-CAN program via specific modalities were examined. Self-reported awareness or exposure to the ALDP campaign among women who completed the survey after this topic was added was also examined. Estimates are reported overall and by sample characteristics including the date of the initial Z-CAN visit. Chi-square tests were used to determine differences by participant characteristics; the Fisher's exact test was used when we had small cell sizes.

We reviewed searches for Z-CAN clinics on the campaign website, counting the number of searches completed monthly from eight pre-defined health regions in Puerto Rico – West, North, Metro-North, San Juan, Northeast, Southwest, Southeast, and East (Puerto Rico Health Insurance Administration, n.d.). Trends in number of monthly searches were plotted in each pre-defined region of Puerto Rico for the duration of the campaign.

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Results

Campaign exposure data

Among Z-CAN clients aged ≥18 years who responded to the two-week patient satisfaction survey (n = 3,503), the majority were age 18–24 or 25–34 years (45.5% and 41.0%, respectively), were married or in a partnered relationship (59.7%), had a college degree or higher (67.7%), and had private or public insurance (45.5% and 47.0%, respectively) (Table 2). More than half reported at least one prior birth (59.4%), and three-fourths received Z-CAN services at a private clinic (75.2%).

Overall, the most commonly reported modalities for first hearing about the Z-CAN program reported by survey respondents were from a friend or family member (38.3%), social media (23.9%), a clinical encounter (12.7%), and website (11.7%). The other modalities were reported by <10% of respondents (Table 3).

There was some variation ($p < .05$) in the distribution of how survey respondents reported first hearing about the Z-CAN program by participant characteristics (Table 3). For example, the proportion of women reporting friend or family varied by the woman's age, relationship status, education level, insurance status, and type of clinic where she received Z-CAN services. Specifically, younger women (44.2%), single women (40.6%), those with less education (43.5%), those with no insurance (48.2%), and those who received services at an academic clinic (40.9%) were the subgroups in each relevant category with the highest percentage who had heard about the Z-CAN program from a friend or family member. Of women who reported hearing about the Z-CAN program from a clinical encounter, the highest percentages were among older women (20.8%), those who were married or partnered (14.5%), those with a graduate degree (17.6%), and those who had one or more previous live births (13.7%). Differences were also found for social media. Awareness of the Z-CAN program through social media was higher among younger women (26.6%) and those who received services at a private practice (26.2%) or public health clinic (27.5%). The proportion of women reporting website was higher among women aged 18–24 (12.8%) and those with public insurance (13.3%), whereas reports of awareness of the Z-CAN program through print materials were lowest among older women (6.5%), those with no insurance (7.6%), and those receiving Z-CAN services at a private practice (7.9%).

Although no analyses were conducted by the date of the Z-CAN visit, some patterns emerged (Table 3). In general, a higher proportion of women with later initial Z-CAN visit dates reported radio, TV, website, social media, and friend or family member compared with those with earlier initial Z-CAN visit dates. The proportions reporting print materials, community event, and clinic encounter had less variation over time.

Nearly two-thirds (61.1%) of survey respondents reported having heard of the ALDP campaign (Table 4). Awareness of the ALDP campaign varied ($p < .05$) by age and date of the woman's initial Z-CAN visit. Fewer older women (≥35 years) knew about the ALDP campaign, and awareness of the campaign increased over time. Whereas 49% of survey respondents reported having heard of the ALDP campaign in January 2017, this proportion increased to 70.8% by May 2017 before dropping to 67.7% in June 2017.

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Clinic location search data

For the duration of the campaign, there were 27,763 searches for Z-CAN clinic locations on the ALDP campaign website, with a peak in searches occurring during April 2017 with 4,151 searches (Figure 1). We further stratified the number of searches by region in Puerto Rico, which are listed in order from highest to lowest: 1) Metro-North (n = 4,981, 18%); San Juan (n = 4,332, 16%); East (n = 4,161, 15%); Northeast (n = 4,086, 15%); West (n = 3,590, 13%); North (n = 2,666, 9%); Southeast (n = 2,043, 7%); and Southwest (n = 1,904, 7%).

Discussion

The ALDP campaign was developed to increase information-seeking behaviors related to contraception use among women of reproductive age in Puerto Rico and increase utilization of Z-CAN contraceptive services. Our findings suggest that campaign had demonstrated success in attaining this objective, as the majority of survey respondents reported having heard of the ALDP campaign. Furthermore, the proportion who had ever heard of the ALDP campaign steadily increased from January 2017 through May 2017, which parallels increased implementation activities within the campaign (Table 1). Similarly, the frequency of clinic searches escalated with the advent of more promotional and outreach activities within the ALDP campaign (Figure 1), suggesting that the campaign's efforts may have led to increased traffic to the ALDP website, which was intended to connect the community with Z-CAN services. A higher proportion of clinic searches were conducted for urban regions, in which more targeted campaign activities were conducted and more individuals lived (Powell et al., 2020). Notably, higher numbers of engagement and participation may be expected in urban regions, as the population size is larger than in rural regions of Puerto Rico. We observed a gradual decline in clinic searches after April, which may indicate a level of message saturation in the communities that were prioritized as part of the ALDP campaign; however, this is only speculative, as we were unable to assess campaign exposure during campaign implementation.

Overall, our evaluation findings indicated that the most frequent mode of communication and awareness regarding the Z-CAN program was friends or family members. Word of mouth through significant others, including family and friends, has been noted for many years as a key influence in what people know and do (Bughin et al., 2010; Buttle, 1998); therefore, our finding that friends and family members were the primary point of exposure for the ALDP campaign is somewhat expected. Historically, word of mouth was considered to be a result of one-on-one communication; however, today, word of mouth may also be achieved through messaging disseminated through social networks on social media (Bughin et al., 2010). Consequently, it is possible that the noted influence of social media in ALDP campaign exposure may be partially driven through friends and family, for example, through the sharing of social media content.

Previous research indicates that providing information through social media during an emergency can be used as an effective source of information about programs or services (Crowe, 2010; Wolkin et al., 2019). Furthermore, social media has been identified as an appropriate means of conveying information regarding contraceptives, as well as relevant programs or services (Sundstrom et al., 2016). Our results reinforce the utility of social

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media to promote awareness during an emergency response and to provide contraceptive information, as it was noted as the second most common way that Z-CAN participants learned of the program (23.9%, Table 3).

Research has previously documented that health care providers are commonly considered a primary source of health information, including sexual and reproductive health issues, such as contraception (Hesse et al., 2005; Hou & Shim, 2010; Iverson et al., 2008; Khurana & Bleakley, 2015; Office of the Surgeon General, 2001). As such, physicians, nurses, and other health care professionals are often the first point of contact for individuals with contraceptive concerns and can provide beneficial and relevant information to their patients. This is consistent with our finding that clinical encounters were a fairly common means for community members learning about the Z-CAN program. As part of campaign implementation, clinicians and staff within the Z-CAN clinics provided information to patients regarding the availability of contraceptive services through counseling and education, as well as through the ALDP posters and brochures, which were placed at each clinic site.

Print materials, including posters, flyers, and brochures were developed by the ALDP campaign for use in clinical settings and for distribution at community engagement events. Therefore, print materials may have been a contributing factor among those respondents who indicated exposure through clinical encounters and community events. With nearly 10% of survey respondents who sought Z-CAN contraceptive services having reported that they had heard about Z-CAN from print materials, this relatively low-cost and low-effort mode of communication should be considered for those with limited access to online communication channels.

Our assessment found that a small proportion of respondents learned of the Z-CAN program through community events. While previous research suggests that community education events should be tailored to communities' needs and can be used to increase knowledge and support from the community for services (Carter et al., 2015), our findings suggest that the reach of the ALDP campaign's community engagement events was more limited as compared to other methods used to try and connect women with Z-CAN services. While the intent of the community events was to extend the campaign's reach beyond social media and digital engagement strategies, Z-CAN staff were limited in time and capacity to attend multiple events across the island, thus limiting the overall reach of community engagement efforts.

In our assessment, we observed that the majority of respondents received Z-CAN services through a private clinic. Although women in Puerto Rico may access contraception at various sites, including community health centers, private practice clinics, academic clinics, public health clinics, and Title X family planning clinics, the Z-CAN program expanded contraceptive access for women. All non-sterilized women of reproductive age were eligible to receive Z-CAN services, irrespective of income and insurance status. Therefore, women could receive Z-CAN services at any clinic that was part of the program.

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The evaluation of the ALDP campaign has some limitations. Due to the primary purpose of the survey, as an assessment of patient satisfaction, the respondents were limited to those who had participated in the Z-CAN program. Hence, our evaluation does not allow for examination of campaign exposure within our larger audience of women of reproductive age in Puerto Rico and those who may not have opted to receive services through Z-CAN. However, a qualitative study of perceptions of the Z-CAN with women who participated in the program, as well as those who did not, is forthcoming. Additionally, the response rate to the patient satisfaction survey was low, and respondents differed from non-respondents (and Z-CAN program participants overall) on several characteristics. It should be noted that only one of those characteristics (i.e., age) was also associated with differences in self-reported awareness of the ALDP campaign. Given that a higher proportion of survey respondents compared with non-respondents were older, and the older age group (≥35 years) reported the lowest awareness of the ALDP campaign, we may have underestimated the proportion of women who knew about the ALDP campaign. Additionally, more than two-thirds of survey respondents (67.7%, Table 2) had a college degree, which is remarkably higher than the recent estimates of female college graduates in Puerto Rico (9.9%; U.S. Census Bureau, 2018). This notable difference indicates that Z-CAN participants, in general, and survey respondents, in particular, may not reflect the population of women in Puerto Rico. Another limitation is that while the ALDP campaign was launched in November 2016, the new question asking specifically about awareness or exposure to the campaign was not added until late January 2017, three months after the ALDP campaign was implemented. Therefore, based on when women took the survey, some participants did not have an opportunity to answer the question. Last, the patient satisfaction survey ended a few months before the end of the Z-CAN program and the ALDP campaign. As awareness of health communication campaigns likely increases over time, we may not know the full extent of the ALDP campaign's diffusion into the community.

It is noteworthy that the Z-CAN program and the ALDP campaign were conducted within the context of an emergency response. Therefore, these efforts were rapidly ramped up to respond to the emerging needs within Puerto Rico. Prior to developing and launching the campaign, formative research was conducted to identify barriers and facilitators that influence contraceptive access for women of reproductive age and to inform the campaign design and strategy (August et al., 2020). However, we do not have baseline data on routine contraceptive visits among women in Puerto Rico and their utilization of different types of contraceptive methods prior to the outbreak. Furthermore, part of the intervention (i.e., the Zika Contraceptive Access Network) was the increased provision and availability of contraceptives in Puerto Rico, which heightened overall access to contraceptives. Coupled with expanded contraceptive access was the expansion of health resources and services in Puerto Rico to address the Zika outbreak. We were unable to control for or assess the impact of other interventions and efforts that may have similarly reached women within the campaign's priority audience. For the purpose of this evaluation, we focused on the extent to which campaign efforts may be associated with accessing Z-CAN services. Consequently, assessing the outcome of contraceptive use may be inclusive of the Ante La Duda Pregunta campaign, as well as other interventions conducted during the Zika response.

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Implications for practice and/or policy

The findings of this evaluation have three main implications regarding delivery of communication campaigns. First, as more participants indicated that they had heard of the Z-CAN program and the associated contraceptive services through the media tactics that were employed as part of the ALDP campaign – particularly social media and digital engagement, communication campaigns that incorporate these media tactics may be more effective at increasing awareness of contraceptive programs than print materials or community events, which is in line with assumptions and best practices of marketing and public health campaign. Second, the findings from this evaluation are not only relevant to delivery of contraceptive programs but may also have broader implications for campaigns during emergency response efforts. In particular, the Z-CAN program and the ALDP campaign was devised and implemented in the midst of the Zika virus outbreak in Puerto Rico as an evidence-based, community-driven initiative, demonstrating the ability to create and implement communication interventions on a short timeline within the context of emergencies. Finally, given that respondents most frequently heard about the program through friends and family, social media, and clinical encounters, it is important that communication campaigns designed to provide contraceptive information for women consider how to leverage word of mouth through social networks and social media while also engaging health care providers as informed and engaged messengers and advocates for available services, since these tactics appear to be an effective way of reaching women.

Conclusions

Utilizing communication campaigns, especially ones that are developed and implemented based on formative research and use diverse campaign strategies, such as ALDP, can increase the awareness of services available, especially during emergency responses when time is of the essence. The effect of public health communication interventions on emergency responses is still an area that requires further investigation; however, research has helped us understand how communication campaigns contribute to changing key behaviors during an emergency (Dickmann et al., 2015; Thomas et al., 2008). In addition, non-emergency response contraceptive programs can utilize the power of multiple communication strategies in reaching diverse audiences. Collectively, the strategies and tactics employed as part of the ALDP campaign encouraged the utilization of contraceptive services and resources available through the Z-CAN program.

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Figure 1.
Searches for Z-CAN clinic sites on the ALDP Campaign Website by Month between November 2016 – September 2017 (N = 27,273).

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Table 1.

Ante La Duda Pregunta (ALDP) Campaign Timeline.

2016	
October 31	ALDP materials (posters, postcards, buttons) disseminated to Z-CAN clinics
November 1	Launch of Z-CAN webpage with clinic finder
November 4	Launch of ALDP campaign with launch of ALDP Facebook Page
November 9	Google digital advertising began
December 2	ALDP campaign website (www.anteladudapregunta.org) launched (includes information on contraceptive methods and Z-CAN clinic finder)
2017	
January 7	Community engagement and outreach efforts began
January 15	YouTube advertising started
January 17	Google Display Network advertising began[a]
January 19	Maxpoint digital advertising began[b]
February 3	HCode digital advertising began[c]
March 13	Radio ads started
September 23	End of ALDP campaign

[a]Google Display Network consists of display advertisements and search advertisements to drive traffic to the ALDP website.

[b]Maxpoint allowed for geographically targeted display ads to ensure the campaign reached women across the island. The determination of where to target ads was based on campaign website visits and clinic searches conducted on the website. Ads were targeted to locations with fewer searches to encourage more engagement with the campaign in these areas.

[c]HCode is used to connect Hispanic audiences to content through digital advertising.

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Table 2.

Characteristics of Z-CAN participants aged ≥18 years who participated in the two-week patient satisfaction survey, October 2016 – July 2017 (N = 3,503).

Participant characteristics	n (%)
Age, years	
18–24	1592 (45.5)
25–34	1435 (41.0)
≥35	476 (13.6)
Relationship status	
Single	1378 (39.3)
Married or partnered	2092 (59.7)
Education	
≤12 years	1095 (31.3)
College degree	1969 (56.2)
Graduate degree	404 (11.5)
Insurance status	
Private or other	1593 (45.5)
Public	1645 (47.0)
None	197 (5.6)
Previous live birth	
0	1454 (41.5)
≥1	2010 (57.4)
Type of clinic where Z-CAN services were received	
Community health center	620 (17.7)
Private practice	2634 (75.2)
Academic clinic	198 (5.7)
Public health clinic	51 (1.5)
Date of initial Z-CAN visit	
July 2016	4 (0.11)
August 2016	24 (0.7)
September 2016	36 (1.0)
October 2016	134 (3.8)
November 2016	322 (9.2)
December 2016	491 (14.0)
January 2017	510 (14.6)
February 2017	435 (12.4)
March 2017	354 (10.1)
April 2017	380 (10.9)
May 2017	558 (15.9)
June 2017	254 (7.3)

Percentages may not add to 100% due to missing data and/or rounding.

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Table 3.

How patients first heard about the Z-CAN program among Z-CAN participants aged ≥18 years who participated in the two-week patient satisfaction survey, October 2016 – July 2017, by participant characteristics (N = 3,503).

Participant characteristics	Radio n (%)	TV n (%)	Website n (%)	Social Media* n (%)	Print Materials n (%)	Community Event n (%)	Friend/ Family n (%)	Clinical Encounter
Overall	*133 (3.8)*	*160 (4.6)*	*410 (11.7)*	*837 (23.9)*	*330 (9.4)*	*68 (1.9)*	*1340 (38.3)*	*444 (12.7)*
Age (years)								
18–24	37 (2.3)§	73 (4.6)	203 (12.8)§	424 (26.6)§	151 (9.5)§	33 (2.1)	704 (44.2)§	163 (10.2)§
25–34	73 (5.1)	65 (4.5)	169 (11.8)	347 (24.2)	148 (10.3)	24 (1.7)	502 (35.0)	182 (12.7)
≥35	23 (4.8)	22 (4.6)	38 (8.0)	66 (13.9)	31 (6.5)	11 (2.3)	134 (28.2)	99 (20.8)
Relationship status								
Single	40 (2.9)	56 (4.1)	157 (11.4)	324 (23.5)	115 (8.4)	31 (2.3)	560 (40.6)§	135 (9.8)§
Married or partnered	92 (4.4)	102 (4.9)	249 (11.9)	508 (24.3)	211 (10.1)	37 (1.8)	762 (36.4)	304 (14.5)
Education								
≤12 years	25 (2.3)§	56 (5.1)	145 (13.2)	263 (24.0)	95 (8.7)	27 (2.5)	476 (43.5)§	119 (10.9)§
College degree	79 (4.0)	86 (4.4)	223 (11.3)	487 (24.7)	194 (9.9)	34 (1.7)	720 (36.6)	249 (12.7)
Graduate degree	29 (7.2)	17 (4.2)	38 (9.4)	78 (19.3)	38 (9.4)	7 (1.7)	128 (31.7)	71 (17.6)
Insurance status								
Private or other	64 (4.0)	69 (4.3)	164 (10.3)§	370 (23.2)	128 (8.0) §	20 (1.3) §	564 (35.4)§	215 (13.5)
Public	59 (3.6)	84 (5.1)	219 (13.3)	403 (24.5)	181 (11.0)	39 (2.4)	652 (39.6)	200 (12.2)
None	8 (4.1)	5 (2.5)	24 (12.2)	50 (25.4)	15 (7.6)	7 (3.6)	95 (48.2)	19 (9.6)
Previous live birth								
0	60 (4.1)	63 (4.3)	182(12.5)	376 (25.9)	135 (9.3)	23 (1.6)	574 (39.5)	161 (11.1)§
≥1	73 (3.6)	97 (4.8)	225 (11.2)	453 (22.5)	189 (9.4)	45 (2.2)	750 (37.3)	276 (13.7)
Clinic type								
CHC	7 (1.1)†	24 (3.9)	549(9.5)	102 (16.5)§	87 (14.0)§	43 (6.9) †	214 (34.5)§	82 (13.2)
Private practice	114 (4.3)	123 (4.7)	326 (12.4)	691 (26.2)	207 (7.9)	22 (0.8)	1033 (39.2)	330 (12.5)
Academic clinic	9 (4.6)	11 (5.6)	18 (9.1)	30 (15.2)	29 (14.7)	3 (1.5)	81 (40.9)	24 (12.1)
Public health clinic	3 (5.9)	2 (3.9)	7 (13.7)	14 (27.5)	7 (13.7)	0 (0.0)	12 (23.5)	8 (15.7)
Date of initial Z-CAN visit‡								

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Participant characteristics	Radio n (%)	TV n (%)	Website n (%)	Social Media* n (%)	Print Materials n (%)	Community Event n (%)	Friend/ Family n (%)	Clinical Encounter
July 2016	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (25.0)	1 (25.0)	2 (50.0)	1 (25.0)
August 2016	0 (0.0)	2 (8.3)	2 (8.3)	3 (12.5)	2 (8.3)	0 (0.0)	5 (20.8)	2 (8.3)
September 2016	0 (0.0)	0 (0.0)	1 (2.8)	4 (11.1)	1 (2.8)	1 (2.8)	9 (25.0)	5 (13.9)
October 2016	2 (1.5)	6 (4.5)	7 (5.2)	12 (8.9)	11 (8.2)	1 (0.8)	32 (24.0)	30 (22.4)
November 2016	4 (1.2)	12 (3.7)	23 (7.4)	32 (9.9)	26 (8.1)	8 (2.5)	105 (32.6)	62 (19.3)
December 2016	7 (1.4)	9 (1.8)	43 (8.8)	87 (17.7)	42 (8.6)	14 (2.9)	161 (32.8)	75 (15.3)
January 2017	5 (1.0)	18 (3.5)	52 (10.2)	100 (19.6)	44 (8.6)	4 (0.8)	188 (36.9)	63 (12.4)
February 2017	5 (1.2)	16 (3.7)	50 (11.5)	125 (28.7)	32 (7.4)	8 (1.8)	171 (39.8)	50 (11.5)
March 2017	10 (2.8)	11 (3.1)	42 (11.9)	105 (29.7)	31 (8.8)	11 (3.1)	150 (42.4)	34 (9.6)
April 2017	22 (5.8)	25 (6.6)	55 (14.5)	110 (29.0)	52 (13.7)	7 (1.8)	163 (42.9)	37 (9.7)
May 2017	51 (9.1)	36 (6.5)	98 (17.6)	180 (32.3)	58 (10.4)	10 (1.8)	234(41.9)	61 (10.9)
June 2017	27 (10.6)	25 (9.8)	37 (14.6)	79 (31.1)	30 (11.8)	3 (1.2)	119 (46.9)	24 (9.5)

*Social Media responses consisted of Facebook, Twitter, and/or Instagram.

§ $p < 0.05$ for chi-square test comparing the distribution of first hearing about the Z-CAN program via specific modalities by participant characteristics.

† $p < 0.05$ for Fisher's exact test comparing the distribution of first hearing about the Z-CAN program via specific modalities by participant characteristics due to small cell sizes.

‡ Statistical testing not conducted on "date of initial clinic visit."

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Table 4.

Heard of the ALDP campaign among Z-CAN participants aged ≥18 years who participated in the two-week patient satisfaction survey between January 2017 – June 2017*, by participant characteristics (N = 2,491).

Participant characteristics	Yes n (%)	No n (%)
Overall	*1521 (61.1)*	*965 (38.7)*
Age, years§		
18–24	716 (61.9)	439 (38.0)
25–34	632 (62.5)	379 (37.5)
≥35	173 (53.6)	147 (45.5)
Relationship status		
Single	570 (59.6)	385 (40.2)
Married or partnered	942 (62.2)	570 (37.6)
Education		
≤12 years	454 (58.2)	325 (41.7)
College degree	891 (63.0)	521 (36.8)
Graduate degree	166 (60.4)	108 (39.3)
Insurance status		
Private or other	685(59.8)	457 (39.9)
Public	730 (62.9)	429 (37.0)
None	86 (57.7)	62 (41.6)
Previous live birth		
0	648 (60.4)	421 (39.3)
≥1	858 (61.5)	535 (38.4)
Clinic type		
Community health center	215 (59.4)	145 (40.1)
Private practice	1204 (62.1)	731 (37.7)
Academic clinic	77 (53.8)	66 (46.2)
Public health clinic	25 (52.1)	23 (47.9)
Date of initial Z-CAN visit§		
January 2017	250 (49.0)	260 (51.0)
February 2017	242 (55.6)	191 (43.9)
March 2017	209 (59.0)	145 (41.0)
April 2017	253 (66.6)	125 (32.9)
May 2017	395 (70.8)	162 (29.0)
June 2017	172 (67.7)	82 (32.3)

Percentages may not add to 100% due to missing data and/or rounding.

*The question was included as part of the survey beginning in January, 2019.

§$p < 0.05$ for chi-square test comparing the distribution of characteristics between those who had and had not heard of the ALDP campaign.