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ORIGINAL ARTICLE

Using social media to recruit study participants for a randomized trial for hypertension

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Aims The present study aimed to evaluate the potential of social media as an approach to recruit hypertensive subjects.

Methods and results In addition to conventional trial recruitment, Facebook ads were run. Over a 115-day recruitment period, Facebook reached 5.3 million people in 168 separate campaigns run in the proximity of 19 sites in the USA and 14 sites in Europe. A total of 182 839 participants (3.4%) clicked on the ad; of those 10 483 subjects (5.7%) completed a dedicated questionnaire. This resulted in 3632 potential candidates. A total of 285 potential candidates were recruited by various recruitment strategies in the specified time period, of which 184/285 (64.6%) came from Facebook. When comparing Facebook with a 7-day radio spot in the same time period, 48 radio spots were launched; resulting in nine inquiries with eventually five potential candidates and two consents.

Conclusion Targeted social media was a successful and efficient strategy to recruit hypertensive subjects.

Keywords Social media • Recruitment • Facebook • Hypertension • Trials

Introduction

Great and costly efforts are required to recruit potential participants into clinical trials. Using social media may make the recruitment process more efficient. Merely 20% of clinical trials are completed on time, a finding mostly linked to challenges in patient recruitment.[1] Recruitment through social media is increasingly being recognized as a tool to efficiently identify eligible subjects at lower costs.[2,3] One of the key reasons for its success is the strong adherence of users to specific social media platforms. Facebook for instance has over 2.38 billion active monthly users of which about 75% access the network on a daily basis.[4] As such, the platform and other like it offer great potential to quickly and affordably enroll patients into clinical trials and surveys.[3,5–7]

At present, little evidence is available on the efficacy of using social media to recruit patients into cardiovascular and hypertension trials.[8] The aim of the present study was to evaluate the efficacy of social

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media as an approach to recruit hypertensive patients into the RADIANCE-HTN SOLO trial.

Methods

The RADIANCE-HTN SOLO (*NCT02649426*) is a multicentre, randomized study that was designed to demonstrate the efficacy and safety of endovascular ultrasound renal denervation (RDN) to reduce ambulatory blood pressure at 2 months in patients with combined systolic–diastolic hypertension in the absence of medications. Between 28 March 2016 and 28 December 2017, 803 patients were screened for eligibility and 146 were randomized to undergo RDN ($n = 74$) or a sham procedure ($n = 72$).[9] Key entry criteria included: age 18–75 years with essential hypertension using 0–2 antihypertensive drugs. Patients were recruited from 21 hospitals in the USA and 18 hospitals in Europe. The study was approved by local ethics committees or institutional review boards and was performed in accordance with the declaration of Helsinki. All participants provided written informed consent. All recruitment materials including social media campaigns were approved by local ethics committees of the involved sites.

Recruitment strategies included social media (Facebook), conventional advertisements (ads) (magazine, brochure/poster, radio, newspaper), web search (the clinical website, craigslist and web-browsing), and physician referral. Both newspaper ads and posters contained brief information about study entry criteria. Newspapers were distributed at public transport places and posters were displayed in outpatient cardiology and hypertension clinics. Radio ads were run for 30 or 60 s providing a short summary of the study, entry criteria and contact information. Ads were run in major metropolitan areas on radio stations with large adult listener bases during popular days and times.

Facebook ads were targeted towards subjects >45 years old within a certain distance from a recruitment site (range 20–50 miles). Criteria were modified over time in order to increase response rates (i.e. distance was increased or decreased, age was increased to >55 years). Facebook ads referred to a dedicated study website translated into country-specific languages. If interested, subjects could complete an anonymous online screening questionnaire which provided direct automatic feedback on study eligibility. The questionnaire included questions such as age, blood pressure, number of antihypertensive drugs, diabetes (yes/no), stroke (yes/no), willing to consider a minimally invasive procedure (yes/no), pregnancy, and involvement in other trials (Supplementary material online). Eligible subjects were asked to provide contact details (name and telephone number) to receive additional information, a process coordinated via a secure online portal (Galen Gateway Patient Recruitment Portal, Galen Patient Recruitment, Inc., Cumberland, RI, USA). Study site was only able to contact potential candidates within their area. The study sponsor was not able to access any personal data. Trained local site personnel or contracted secondary screeners contacted candidates by phone to verify eligibility and answer potential questions. A subsequent outpatient clinic visit was scheduled during which the study was explained in greater detail and the informed consent form could be signed.

Statistical analysis

Categorical variables were expressed as percentages and counts. Continuous variables were described as mean ± standard deviation when normally distributed, data were compared using an Independent-samples or paired-samples *T*-test to analyse the difference between recruitment methods. In case of non-normal distribution, median data were presented with the interquartile range. All statistical tests are two-tailed. A *P*-value <0.05 was considered statistically significant. Statistical analysis was performed using SPSS statistical analysis (version 24.0).

Results

Facebook ads were active during a 115-day recruitment period between August and November 2017. A total of 285 potential candidates were recruited by different recruitment strategies in this specific time period, of which 184 (65%) were consented through Facebook (*Table 1*).

The average age of the subjects consented through Facebook was 59 ± 8 years and 51% were male (*Table 2*).

Facebook reached 5.3 million people in 168 separate campaigns run in proximity to 19 sites in the USA and 14 sites in Europe. The number of candidates per site was variable with a median of 23 (17–26) candidates per site that passed the questionnaire (*Figure 1*). A total of 27/184 subjects were eventually randomized.

Total cost for the Facebook ads was $152 412; costing $907/campaign and $0.83/click. This resulted in a total cost of $828/consent. During the same recruitment period, 7-day radio spots were launched with a total cost of $2870; resulting in nine inquiries with eventually five potential candidates and two consents ($1435/consent).

Discussion

The use of targeted social media through Facebook was an efficient strategy to find candidates for a prospective randomized hypertension trial. Our findings add to previous studies assessing the efficacy of Facebook campaigns to recruit participants into an observational blood pressure trial by Nash *et al.*[8] in Australia and Tasmania, in which the authors concluded that Facebook ads were associated with a significant increase in the recruited number of patients/month. In the latter study, an increase in the recruited number was found to be strongly location dependent with a higher yield in densely populated regions. The average age of the potential study candidates recruited by using Facebook in the present study was significantly higher as compared to candidates recruited by conventional methods. A finding that can be explained by the higher overall age of

Table 1 Screened individuals by recruitment strategy

Recruitment strategy	Total	*N* (%) 285
Social media	Facebook	184 (64.5)
Traditional media	Newspaper	26 (9.1)
	Poster	2 (0.7)
	Radio	2 (0.7)
	Web search	8 (2.8)
	Internal referral	3 (1.1)
	Word of mouth	6 (2.1)
	Physician referral	44 (15.4)
	Other[a]	10 (3.5)

[a]Clinical website, clinicaltrials.org, craigslist.

Table 2 Baseline characteristics

	Total population recruited (*N* = 285)	Population recruited via Facebook (*N* = 184)	Population recruited via other methods (*N* = 101)	*P*-value
Age (years)	57 ± 10	59 ± 8	54 ± 12	<0.001
Male gender (%)	151 (53)	93 (50.5)	58 (57.4)	0.267
BMI (kg/m^2)	30.6 ± 5.9	30.8 ± 6.2	30 ± 5.4	0.273
Caucasian, *n* (%)	226 (79.3)	151 (82.1)	75 (74.3)	0.004
Systolic office BP (mmHg)	141 ± 17	141 ± 16	141 ± 20	0.739
Diastolic office BP (mmHg)	91 ± 11	91 ± 11	91 ± 12	0.572
Mean number of antihypertensive drugs	1.3 ± 0.7	1.3 ± 0.7	1.2 ± 0.8	0.160

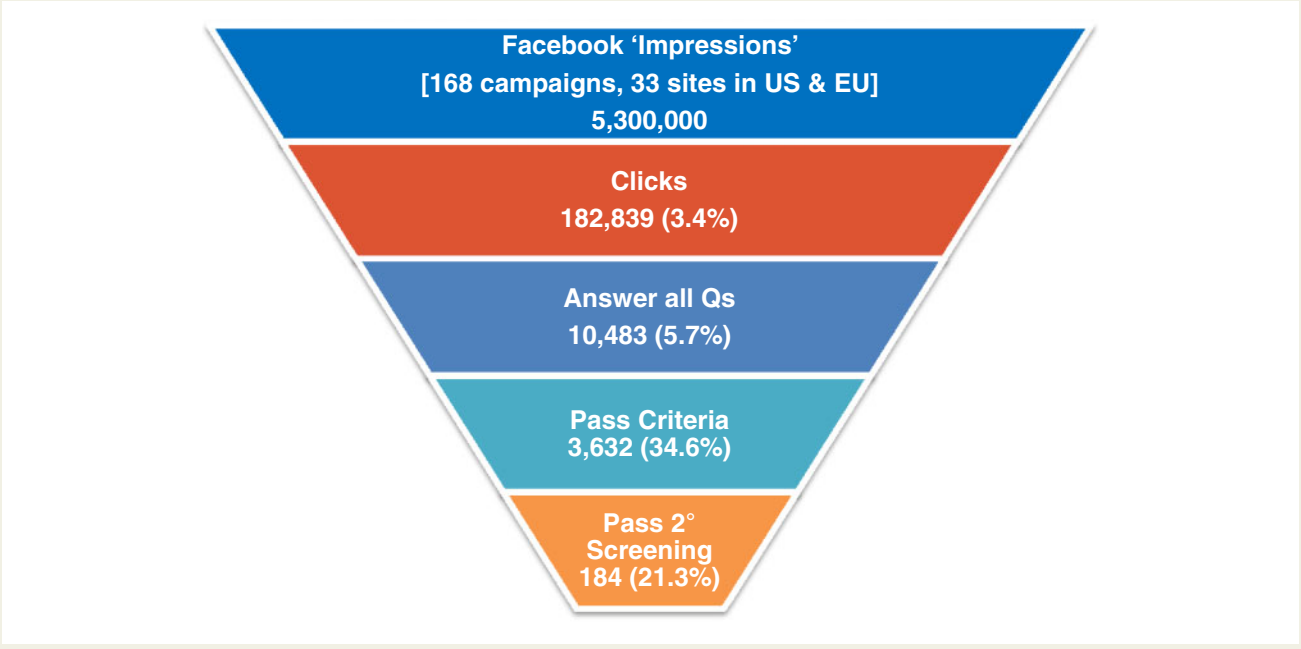

Figure 1 Recruitment funnel.

Facebook users. The latter was also in line with the study of Nash *et al.*,[8] in which Facebook was successful in recruiting a cohort of patients at higher age. According to the data of the Pew Research Center in 2018, more older people use Facebook and Youtube, whereas younger people use more Instagram.[4]

In the present study, Facebook ads generated an overwhelming amount of interest in a trial on a novel device-based treatment option for hypertension. Using an online screening portal in RADIANCE-HTN SOLO allowed to automatically exclude over 65% of subjects prior to consent. Perhaps one of the features contributing to successful recruitment efforts in this study was including the ability to filter patients using both the online questionnaire and secondary screeners. The need for an additional online screening portal as a filter between Facebook clicks and study referral should be put into perspective to strict rules and regulations limiting the amount of information to be provided in the add itself and the complexity of the entry criteria of the associated study. The low percentage of patients that were finally enrolled in the trial was determined by another set of stringent (clinical) entry criteria for the RADIANCE SOLO trial that could not be ruled out by online questionnaires.

Finally, Facebook appeared to be less expensive than radio ads, however, with the present available data and the small sample size of responders to radio ads, a reliable cost-effectiveness comparison could not be performed.

Limitation

Our study has several limitations. First, social media could only be compared with the radio spots in the same time period relative to cost because robust data on costs of other conventional ads were not available. Second, a large number of potential candidates passed the online questionnaire (via Galen), however, only a small percentage of these candidates were finally randomized, likely due to an inability to be reached for follow-up screening or changing their minds on their availability and interest in participating in the study. Finally, by

using Facebook, we were selecting a certain type of patients (e.g. who have access to internet, middle-aged participants).

Conclusion

Targeted social media was a successful and efficient strategy to find potential candidates for a multicentre blood pressure clinical trial. Whether this approach can be replicated across other disease states or demographics remains to be studied.

Supplementary material

Supplementary material is available at *European Heart Journal – Digital Health* online.

Data availability

The authors confirm that the data supporting the findings of this study are available within the article and/or [and/or] its supplementary materials.

Conflict of interest: A.P. was an investigator for the RADIANCE SOLO trial, received research grant, lecture fees and sponsorship for meetings from RECOR Medical. Same type of financial support from MEDTRONIC and ASI. M.A. has received institutional research grants from ReCor Medical, Servier, Novartis, Quantum Genomics, Idorsia, the French Ministry of Health, and the French Federation of Cardiology; and honoraria from Actelion, Idorsia, Novartis, CVRx, Servier, and Astra. K.S. reports receiving institutional research grant from Recor, Medtronic, CSI. F.M. is supported by Deutsche Hochdruckliga, Deutsche Gesellschaft für Kardiologie, and Deutsche Forschungsgemeinschaft and has received speaker honoraria from Medtronic and ReCor. M.S. was an investigator for the Radiance Solo study, received speaker honoraria from Recor Medical. M.I. is an employee of ReCor Medical. J.D. received institutional grant/research support from Abbott Vascular, Biotronik, Boston Scientific, Acist Medical, Medtronic and PulseCath, and consultancy and speaker fees from Acist medical, Boston Scientific, ReCor Medical, Medtronic and Pulse Cath.

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