Original article

The impact of social marketing campaigns on reducing mental health stigma: Results from the 2009–2014 Time to Change programme

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ABSTRACT

Background: In England, during 2009–2014 the 'Time to Change' anti-stigma programme has included a social marketing campaign (SMC) using mass media channels, social media and social contact events but the efficacy of such approach has not been evaluated yet.
Methods: The target population included people aged between mid-twenties/mid-forties, from middle-income groups. Participants were recruited through an online market research panel, before and after each burst of the campaign (with a mean number of unique participants per each burst: 956.9 ± 170.2). Participants completed an online questionnaire evaluating knowledge [Mental Health Knowledge Schedule (MAKS)]; attitudes [Community Attitudes toward Mental Illness (CAMI)]; and behaviours [Reported and Intended Behaviour Scale (RIBS)]. Socio-demographic data and level of awareness of the SMC were also collected.
Results: A total of 10,526 people were interviewed. An increasing usage of the SMC-media channels as well as of the level of awareness of SMC was found ($P < 0.001$). Being aware of the SMC was found to be associated with higher score at MAKS (OR = 0.95, CI = 0.68 to 1.21; $P < 0.001$), at 'tolerance and support' CAMI subscale (OR = 0.12, CI = 0.09 to 0.16; $P < 0.001$), and at RIBS (OR = 0.71, CI = 0.51 to 0.92; $P < 0.001$), controlling for confounders.
Conclusion: The SMC represents an important way to effectively reduce stigma. Taking into account these positive findings, further population-based campaigns using social media may represent an effective strategy to challenge stigma.

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1. Background

Social marketing is focused on enabling, encouraging and supporting behavioural changes among target audiences [1]. The benchmark of any social marketing campaign is to put the "individual" at the centre of the programme, mainly adopting the social media as channel of communication [2]. Social media are described as Internet-based applications, which allow people to share opinions [3,4]. Social media are considered among the mass media communication channels – together with newspapers, magazines, billboards, radio, television, Internet [5] – but they are distinct in that they enable people to be actively involved in the communication process and stay connected with other [6]. It has been well documented that mass media and social media constitute an immensely powerful source of social influence and intend to reach large numbers of people [7]. In particular, in the field of mental health and of challenging stigma attached to mental disorder, mass media and social media can be used to positively change opinions toward people with mental disorders, promoting positive stories related to mental health problems [8] or proper intervention to reduce stigma in general population [9]. Their recent growth and development has had an impact on psychiatric practice, in terms of educating the general public on mental health topics and on patients' help-seeking [10–13]. However, media and social media can have also a detrimental effect on the public image of psychiatry [14–16].

Over the past decades – considering the huge power of these new communication channels – several social marketing interventions have been developed in an attempt to modify various health behaviours among the general population [17–22].

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Moreover, as pointed out by Thornicroft et al. [23], in the attempt to overcome stigma attached to mental disorders at the population level, interventions using a social marketing approach are increasingly being used and proofs of efficacy have been collected [24,25].

In England, since 2009 the "Time to Change" anti-stigma programme has included a social marketing campaign using mass media channels, social media and social contact events [26,27]. The novel aspect of TTC programme is the explicit target to change behaviour. The key active ingredients are forms of contact between people with and without experience of mental illness [24–28].

Anti-stigma programmes are complex, and work across several systems to bring about community-wide change, such as improvement in public attitudes toward people with a mental illness [29,30]. A major assumption is that community-level changes will result in improvements in the circumstances of people with a mental illness. Little is known about which components of the wider community are amenable to change, or the specific pathway through which community-level changes result in improvement in individual outcomes. Moreover, there are multiple contextual issues that can undermine specific anti-stigma efforts, such as media reporting of incidents involving someone with a mental illness [31–33].

TTC is based on the theory that considers stigma as a consisting of difficulties in knowledge (ignorance and misinformation), prejudicial attitudes, and discriminatory behaviour [34]. Considering this conceptualization, different aspects of the TTC have been developed [26].

Similar to other public health-oriented programmes, anti-stigma interventions are often not amenable to a "strictly" experimental approaches, but there is a huge demand for studies aiming to evaluate what works, when, for whom, and why [31].

The aims of the study are to:

- describe the usage of social media related to the launch of the SMC-TTC;
- assess the awareness of the SMC-TTC in the English population between January 2009 and January 2014;
- evaluate the impact of the SMC-TTC to change knowledge, attitudes, and behaviour.

2. Methods

2.1. Design of the study

The TTC social marketing campaign was developed through a multi-step procedure, including surveys, workshops, interviews and focus groups to which participated mental health services' users and experts in the field of challenging stigma. The campaign media targeted men and women in their mid-twenties/mid-forties, from middle-income groups. The choice of acquiring a sample on specific socio-demographic characteristics of the English population is based on the fact that social marketing strategies typically target specific audiences, predicted to be amenable to attitude change [35]. Participants were recruited through an online market research panel (900–1100 participants per burst; mean number of participant per burst: 956.9 ± 170.2). In each burst, people were recruited before and after the launch of the campaign activities of the social marketing campaign. The bursts of social marketing activity included national television, print, radio, cinema, outdoor and online advertisements. Social media included the development of a dedicated web page, as well as a Facebook page, and a Twitter page. Further details on the development and methodology of the social marketing campaign were reported elsewhere [36].

2.2. Assessment tools

Mental health-related knowledge was assessed using the Mental Health Knowledge Schedule (MAKS). The MAKS includes six items covering stigma-related mental health knowledge areas and six items about classification of various disorders as mental illnesses [37]. Each item score on a 5-point Likert scale, from 5 = 'strongly agree' to 1 = 'strongly disagree'. The total score is calculated by adding together the response values of each item.

Attitudes towards people with mental disorders were evaluated using a modified version of the Community Attitudes toward the Mentally Ill Scale (CAMI), consisting of 12 items [38]. The total score for each subscale was calculated so that higher scores suggest more positive or less stigmatising attitudes. A confirmatory factor analysis was performed in order to identify the two main dimensions of the scale: the first factor is related to prejudice and exclusion (Cronbach alpha value: 0.836), the latter is related to tolerance and support towards people with mental disorders (Cronbach alpha value: 0.729). Our findings are in line with those presented in a previous study exploring the two-factor structure of the 26-items CAMI carried out with the general population [39]. The items grouped in the two factors are reported in Supplementary data – Table 1.

Intended behaviour towards people with mental health problems was assessed through the Reported and Intended Behaviour Scale (RIBS) [40]. The RIBS consists of 4 domains (living with, working with, living nearby, and continuing a relationship with someone with a mental health problem) evaluating the actual behaviour and the intended one. For the aims of the study, just the intended behaviour was evaluated. Each item is scored on a 5-point Likert scale, from 1 = 'strongly disagree to engage in the stated behaviour' to 5 = 'strongly agree with engaging in the stated behaviour'. The total score is calculated by adding together each single item, and higher score indicated higher willingness to engage in the behaviour.

Campaign awareness was assessed through a specific question ("Can you think of any campaigns advertising or events in the local community you have seen or heard of recently concerning mental health or mental health problems?"). It was calculated an overall campaign awareness indicating people who reported seeing any kind of advertisements as 'campaign aware', whereas the other were coded as 'not aware' [36].

Data regarding the usage of social media were obtained through Google Analytics and Facebook's internal analytics system, in terms of number of web users.

2.3. Potential confounders

In the online survey, socio-demographic data were collected. Statistical analyses were adjusted according to the following confounding variables: gender (dichotomous: female – reference category; male); age (continuous); ethnicity (categorical: White – reference category; Asian; Black; Mixed; Other); socioeconomic group (categorical: B, middle class – reference category; C1 – lower middle class; C2 – skilled working class; based on the National Readership Survey social grades) [41]; geographic region (dichotomous: London – reference category; other region); marital status (dichotomous: Married – reference category; not married); working status (categorical: Unemployed – reference category; student; employed); degree of familiarity with mental disorder/knowing someone with a mental disorder (adapted from the continuous level-of-contact report developed by Holmes et al. [42]; with highest level indicating higher familiarity with mental disorders).

The time point of the data collection was recorded and coded using the variables "Burst" (categorical: Burst 1 – January 2009 (reference category); Burst 2 – July/August 2009; Burst 3 – May

2010; Burst 4 – September/October 2010; Burst 5 – April/May 2011; Burst 6 – Jul/Sept 2011; Burst 7 – Jan/Feb 2012; Burst 8 – Jan/Feb 2013; Burst 9 – Aug/Sept 2013; Burst 10 – Jan/Mar 2014; Burst 11 – Sept/Dec 2014), and "Phase of the burst" (dichotomous: pre-burst - reference category; post-burst).

2.4. Statistical analysis

Descriptive statistics were performed in order to describe the overall sample. We employed parametric and non-parametric tests in order to test the association of the social marketing campaign with knowledge of mental illness, attitudes and behaviour. In addition, multivariate linear and logistic regression models were used in order to test the relationship between the awareness of the SMC-TTC with the measured outcomes. All of the models were adjusted for the impact of the "Burst" as well as main relevant socio-demographic characteristics identified from the literature in the field (i.e., gender; age; ethnicity; socioeconomic group; geographic region; marital status; working status; degree of familiarity with mental disorder/knowing someone with a mental disorder).

We also included an interaction term to the regression models in order to capture a temporal pattern between the different bursts and the 'MAKS total score'; 'Prejudice and exclusion – CAMI subscale'; 'Tolerance and support – CAMI subscale'; 'RIBS total score' outcomes.

A propensity score was calculated in order to adjust for the likelihood of participants' awareness of the TTC campaign in each burst [43,44]. This method was adopted since it produces a better adjustment for differences at baseline, rather than simply including potential confounders in the multivariable models. The independent variables used for the calculation of the propensity score were: gender, ethnicity, socioeconomic status and region [45]. The obtained propensity score was used to weight the observations in the multivariable analysis [46].

In the final regression model, the inverse probability weights, based on the propensity score, were applied in order to model for the independence between exposure to the campaign and stigma outcomes and estimation of causal effects [47,48].

Socio-demographic characteristics were weighted according to the prevalence rate of ethnicity within geographic region reported by the Office for National Statistics, released 2011 [49].

3. Results

3.1. Evaluating the success of the social marketing campaign

Since the launch of the TTC campaign, a web page, a Facebook page and a Twitter account have been created. The global number of social media users has increased significantly over time ($P < 0.001$). In particular, during July/September 2010 (Burst 4), more than 50,000 people have actively used the TTC social media channels. This number doubled by September/July 2011 (Burst 6) (100,000 users), and increased to more than 250,000 during September/December 2014 (Burst 11) (Supplementary data – Fig. 1). Using analytics for each specific social media channel, we found that the vast majority of users accessed the Facebook webpage or the Twitter account, compared with the number of web page visits (Fig. 1).

3.2. Target population – descriptive statistics

In our study, 10,526 people were interviewed between 2009 and 2014 with a mean (SD) age of 35.0 (0.1) years, mainly female (51.5%), married (74.7%), employed (87%), and of white ethnicity (85.4%). The main socio-demographic characteristics are presented in Table 1.

3.3. Campaign awareness: assessment and predictors

As expected, before the launch of the campaign (January 2009), virtually no one was aware of TTC, but after the first burst this had increased to a rate of 38% of awareness. After the second burst, in the post-phase, an awareness rate of 43% was found. In January/February 2012 (Burst 7) and in January/February 2013 (Burst 8), the highest levels of awareness were reported, being 81.7% and 60.7% respectively.
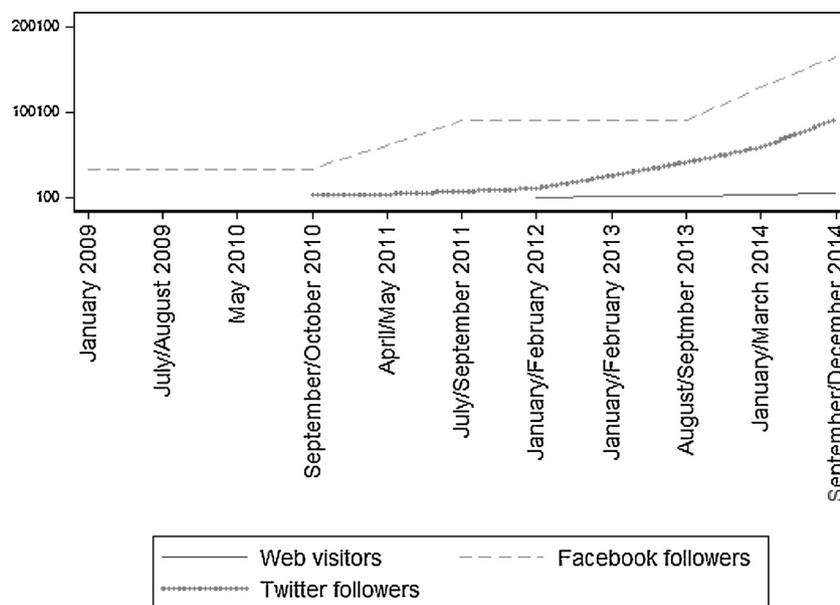

Fig. 1. Number of users for each social media channels (TTC web site, Twitter account and Facebook page). The time trend for the number of Web visitors is statistically significant at the value of $P < 0.05$. The time trend for the number of Twitter account is statistically significant at the value of $P < 0.001$. The time trend for the number of users of the Facebook page is statistically significant at the value of $P < 0.001$.

Table 1
Participants' socio-demographic characteristics.

Global sample n = 10,526	
Gender, female, n (%)	5465 (51.9)
Age, mean (SD)	34.7 (5.8)
Socioeconomic status, n (%)	
B, middle class	3800 (36.1)
C, lower middle class	3847 (36.6)
C2, skilled working class	2879 (27.4)
Married, yes, n (%)	7698 (73.1)
Employment status, n (%)	
Working	9227 (87.7)
Student	167 (1.6)
Not working	1132 (10.8)
Children, yes, n (%)	5702 (54.2)
Ethnicity, n (%)	
White	66.1 (6956)
Black	6.63 (698)
Asian	21.0 (2211)
Mixed	4.7 (489)
Other	1.6 (172)
Living in London, yes, n (%)	24.1 (2534)
Familiarity with mental illness, n (%)	
Self	775 (7.4)
Immediate family (spouse/child/sibling)	1793 (17.0)
Partner (living with you)	450 (4.3)
Partner (not living with you)	174 (1.7)
Friend	1982 (18.8)
Other family (uncle/aunt/cousin/grand parent)	1300 (12.4)
Acquaintance	636 (6.0)
Other	905 (8.6)
No-one known	2506 (23.8)
Don't Know	5 (0.04)

The percentages of awareness rate according to the pre- vs. post-phase in each burst are reported in Supplementary data – Table 2.

According to the logistic regression model, there was a significant increase of level of campaign awareness over time

($P < 0.001$) (Supplementary data – Fig. 2). In particular, the rate of campaign awareness increased significantly at each post-phase, as well as burst after burst, adjusting for confounders.

3.4. Effectiveness of the Time to Change campaign

In order to assess the association of the social marketing TTC campaign with the outcome measures on the target population, we performed multivariable linear regression models using the inverse probability weights. In the multivariable models, we found that being aware of the campaign was associated with higher levels of knowledge, with more positive 'tolerance and support' attitudes, and more positive intended behaviour, adjusting for confounding variables such as gender, age, socioeconomic status, geographic region, working status, ethnicity, familiarity with mental illness, burst of the campaign and pre- vs. post-phase.

In regards to the impact of the social marketing campaign on the levels of knowledge, being aware of the TTC campaign was significantly associated with a higher score on the MAKS subscale (OR = 0.95, CI = 0.68 to 1.2; $P < 0.001$) (Table 2).

In particular for attitudes towards mental illness, people who were aware of TTC reported a higher score on the "CAMI tolerance and support subscale" (OR = 0.12, CI = 0.09 to 0.16; $P < 0.001$), while being interviewed during the most recent burst (compared with the first burst of campaign activity) as well as being interviewed during the post-phase of activity each burst were not significant (Table 3).

On the other hand, for people reporting an awareness of the TTC campaign there was a slight improvement on the "CAMI prejudice and exclusion subscale", which did not reach the level of statistical significance (OR = 0.03, CI: −0.02 to 0.007).

Concerning the intended behaviour measured by the RIBS, being aware of the SMC-TTC campaign was associated with higher levels of positive behaviour (OR = 0.71, CI = 0.51 to 0.92; $P < 0.001$), whereas the different bursts as well as being in the post-phase of each burst did not impact on knowledge or attitudes (Table 2).

Table 2
Predictors of levels of knowledge (MAKS) and intended behaviour (RIBS) in the target population.

	MAKS total score		RIBS total score	
	Sampling weights	Inverse probability weight	Sampling weights	Inverse probability weight
	Coefficient (95% CI)	Coefficient (95% CI)	Coefficient (95% CI)	Coefficient (95% CI)
Campaign awareness	0.94 (0.68 to 1.2)[*]	0.95 (0.68 to 1.21)[*]	0.71 (0.51 to 0.91)[*]	0.71 (0.51 to 0.92)[*]
Burst (ref. Burst 1)				
Burst 2	−0.181 (−1.11 to 0.76)	−0.18 (−1.12 to 0.75)	0.20 (−0.41 to 0.81)	0.19 (−0.41 to 0.80)
Burst 3	−0.61 (−1.57 to 0.36)	−0.54 (−1.50 to 0.42)	−0.12 (−0.79 to 0.56)	−0.13 (−0.79 to 0.54)
Burst 4	−0.41 (−1.43 to 0.61)	−0.41 (−1.43 to 0.61)	0.15 (−0.57 to 0.87)	0.10 (−0.62 to 0.82)
Burst 5	−0.08 (−0.95 to 0.79)	−0.05 (−0.93 to 0.83)	−0.07 (−0.78 to 0.64)	−0.09 (−0.81 to 0.63)
Burst 6	0.18 (−0.73 to 1.10)	0.19 (−0.74 to 1.12)	0.40 (−0.31 to 1.07)	0.34 (−0.36 to 1.10)
Burst 7	−0.53 (−1.44 to 0.37)	−0.53 (−1.43 to 0.37)	0.04 (−0.64 to 0.72)	0.01 (−0.67 to 0.69)
Burst 8	−0.040 (−0.93 to 0.85)	−0.01 (−0.91 to 0.88)	0.56 (−0.10 to 1.22)	0.55 (−0.12 to 1.20)
Burst 9	0.11 (−0.92 to 1.14)	0.15 (−0.88 to 1.17)	0.174 (−0.61 to 0.96)	0.17 (−0.61 to 0.95)
Burst 10	−0.16 (−0.98 to 0.67)	−0.17 (−0.99 to 0.66)	0.27 (−0.34 to 0.87)	0.23 (−0.38 to 0.83)
Burst 11	0.18 (−0.69 to 1.06)	0.25 (−0.63 to 1.13)	0.22 (−0.44 to 0.89)	0.21 (−0.46 to 0.88)
Pre vs. post (ref. pre)	−0.50 (−1.33 to 0.35)	−0.50 (−1.34 to 0.35)	−0.44 (−1.04 to 0.16)	−0.45 (−1.10 to 0.15)
Burst[*]pre vs. post				
Burst 2[*]post	0.80 (−0.40 to 2.0)	0.80 (−0.38 to 1.98)	0.19 (−0.61 to 0.99)	0.18 (−0.62 to 0.98)
Burst 3[*]post	0.84 (−0.41 to 2.10)	0.82 (−0.43 to 2.10)	0.53 (−0.40 to 1.43)	0.57 (−0.33 to 1.46)
Burst 4[*]post	0.98 (−0.26 to 2.21)	1.0 (−0.25 to 2.21)	0.14 (−0.77 to 1.05)	0.17 (−0.74 to 1.08)
Burst 5[*]post	0.28 (−0.84 to 1.40)	0.29 (−0.84 to 1.41)	0.78 (−0.12 to 1.68)	0.78 (−0.13 to 1.70)
Burst 6[*]post	0.05 (−1.16 to 1.30)	0.05 (−1. 20 to 1.27)	−0.13 (−1.06 to 0.81)	−0.12 (−1.07 to 0.83)
Burst 7[*]post	0.36 (−0.77 to 1.49)	0.40 (−0.74 to 1.53)	0.28 (−0.60 to 1.14)	0.34 (−0.52 to 1.20)
Burst 8[*]post	0.48 (−0.64 to 1.60)	0.46 (−0.66 to 1.58)	0.13 (−0.70 to 0.95)	0.13 (−0.70 to 0.95)
Burst 9[*]post	0.74 (−0.56 to 2.05)	0.74 (−0.56 to 2.03)	0.81 (−0.17 to 1.80)	0.81 (−0.17 to 1.80)
Burst 10[*]post	0.62 (−0.44 to 1.67)	0.66 (−0.40 to 1.71)	0.71 (−0.07 to 1.50)	0.77 (−0.02 to 1.60)
Burst 11[*]post	0.80 (−0.30 to 1.90)	0.75 (−0.36 to 1.85)	0.69 (−0.16 to 1.54)	0.70 (−0.15 to 1. 60)

All models were adjusted for gender, age, socioeconomic group, having children, marital status, employment status, London resident, familiarity with mental illness.
[*] $P < 0.001$.

Table 3
Predictors of attitudes towards mental illness in the target population.

	CAMI - Prejudice and exclusion subscale		CAMI - Tolerance and support subscale	
	Sampling weights	Inverse probability weight	Sampling weights	Inverse probability weight
	Coefficient (95% CI)	Coefficient (95% CI)	Coefficient (95% CI)	Coefficient (95% CI)
Campaign awareness	0.03 (−0.02 to 0.07)	0.03 (−0.02 to 0.07)	0.12 (0.09 to 0.15)[*]	0.12 (0.09 to 0.16)[*]
Burst (ref. Burst 1)				
Burst 2	−0.03 (−0.17 to 0.11)	−0.03 (−0.17 to 0.11)	−0.03 (−0.15 to 0.08)	−0.04 (−0.15 to 0.08)
Burst 3	−0.04 (−0.18 to 0.11)	−0.04 (−0.19 to 0.10)	−0.06 (−0.19 to 0.07)	−0.06 (−0.19 to 0.06)
Burst 4	0.02 (−0.12 to 0.15)	0.02 (−0.12 to 0.15)	0.03 (−0.08 to 0.15)	0.03 (−0.09 to 0.15)
Burst 5	0.04 (−0.09 to 0.18)	0.05 (−0.09 to 0.19)	0.02 (−0.10 to 0.14)	0.02 (−0.09 to 0.14)
Burst 6	0.03 (−0.12 to 0.19)	0.03 (−0.13 to 0.19)	0.04 (−0.09 to 0.16)	0.04 (−0.09 to 0.16)
Burst 7	0.01 (−0.14 to 0.17)	0.01 (−0.15 to 0.17)	0.03 (−0.09 to 0.14)	0.02 (−0.09 to 0.14)
Burst 8	−0.13 (−0.29 to 0.03)	−0.13 (−0.29 to 0.03)	0.01 (−0.12 to 0.13)	0.01 (−0.12 to 0.13)
Burst 9	0.03 (−0.12 to 0.19)	0.04 (−0.12 to 0.19)	−0.05 (−0.18 to 0.08)	−0.05 (−0.18 to 0.08)
Burst 10	0.04 (−0.08 to 0.17)	0.04 (−0.09 to 0.17)	−0.04 (−0.15 to 0.07)	−0.05 (−0.16 to 0.06)
Burst 11	−0.12 (−0.27 to 0.02)	−0.13 (−0.28 to 0.02)	0.02 (−0.10 to 0.14)	0.02 (−0.10 to 0.14)
Pre vs. post (ref. pre)	0.07 (−0.05 to 0.20)	0.08 (−0.04 to 0.21)	−0.03 (−0.14 to 0.08)	−0.03 (−0.14 to 0.07)
Burst[*]pre vs. post				
Burst 2[*]post	−0.02 (−0.19 to 0.15)	−0.03 (−0.21 to 0.14)	0.07 (−0.07 to 0.22)	0.08 (−0.06 to 0.22)
Burst 3[*]post	0.04 (−0.15 to 0.23)	0.03 (−0.16 to 0.22)	0.11 (−0.05 to 0.27)	0.11 (−0.05 to 0.27)
Burst 4[*]post	−0.05 (−0.21 to 0.12)	−0.06 (−0.23 to 0.11)	0.03 (−0.12 to 0.18)	0.03 (−0.12 to 0.18)
Burst 5[*]post	−0.13 (−0.31 to 0.05)	−0.14 (−0.32 to 0.04)	0.01 (−0.14 to 0.16)	0.01 (−0.14 to 0.16)
Burst 6[*]post	−0.12 (−0.32 to 0.08)	−0.13 (−0.33 to 0.07)	−0.01 (−0.17 to 0.14)	−0.01 (−0.17 to 0.15)
Burst 7[*]post	−0.04 (−0.22 to 0.14)	−0.04 (−0.22 to 0.14)	−0.07 (−0.22 to 0.07)	−0.06 (−0.21 to 0.08)
Burst 8[*]post	0.05 (−0.15 to 0.24)	0.05 (−0.19 to 0.24)	0.04 (−0.11 to 0.19)	0.04 (−0.11 to 0.19)
Burst 9[*]post	−0.04 (−024 to 0.16)	−0.05 (−0.25 to 0.15)	0.14 (−0.02 to 0.31)	0.14 (−0.03 to 0.30)
Burst 10[*]post	−0.12 (−0.28 to 0.05)	−0.12 (−0.29 to 0.04)	0.11 (−0.03 to 0.24)	0.12 (−0.02 to 0.25)
Burst 11[*]post	−0.04 (−0.23 to 0.15)	−0.05 (−0.24 to 0.15)	0.06 (−0.08 to 0.20)	0.06 (−0.09 to 0.20)

All models were adjusted for gender, age, socioeconomic group, having children, marital status, employment status, London resident, familiarity with mental illness.
[*] P < 0.001.

4. Discussion

The present study evaluated the impact of the SMC-TTC on changing knowledge, attitudes and behaviours towards mental disorders in the target population in England. In particular, we found that being aware of the SMC-TTC was associated with more positive attitudes towards people with mental illness and that the social media represented an important way to communicate and widespread information regarding the campaign.

Our results are in line with those of the previous TTC evaluation and other anti-stigma social marketing campaigns, showing that campaign awareness represents one of the most important predictors of the efficacy of the campaign [36,50]. Moreover, this finding supports results obtained by social marketing campaigns promoted for changing behaviours related to unhealthy habits [51]. In fact, a study carried out in China showed that the recall of the campaign was one of the most important elements to evaluate efficacy of the campaign for reducing the smoking consumption [51].

The lack of effect of "pre-/post-phase of the burst" is in line with previous study carried out in the field of fighting stigma. In a study promoted in 2001 by Stuart and Arboleda-Florez [52], they found that in the post-intervention group the recall of the campaign was increased, while there were no differences in knowledge or social distance scores from pre- to post-test. Further studies should be promoted in order to test the hypothesis whether the absence of effect is due just to insufficient duration of follow-up [24,53].

One of the most promising results is related to the improvement in CAMI tolerance and support subscale in people who were aware of the social marketing campaign. This finding is in line with a recent cross-sectional study carried out in Spain [50], with a similar methodology to those adopted in our study. It also confirms the positive impact that social media can have in challenging stigma attached to mental disorders [7] and supports the findings that at a population level it is possible to obtain a pattern of

benefits for positive attitude changes [24]. It is interesting as in an omnibus survey carried out in the general population in England, a different pattern of change in attitudes was found [39], confirming that some contextual events – such as mass media coverage and reporting on mental health issues – can have an impact on attitudes toward mental illness [30,54].

One of the main strengths of our study is related to the provision of data on the usage of SMC-TTC's social media. To date, mass media/communication campaigns are not necessarily based on the social marketing model or principles, even though they are often considered part of a social marketing intervention (e.g., a mass media campaign is used as a promotional tool for a social marketing product) [17]. It has been clearly demonstrated that social media can be effective in increasing awareness on the targeted topic and motivating people to change their behaviour [55]. In relation to the social media usage, our figures are very encouraging, and are in line with data from different studies on the use of social media for promoting health topics [51,56–58]. As expected, Twitter and Facebook followers represented the vast majority of social media users over the time-period, since these new social media are embedded with the principles of any social marketing campaign – giving the possibility to users to constantly share their own opinions [59]. To note, in 2008 the World Psychiatric Association (WPA) programme "Open the doors" promoted a website, and it was found that – in the 10 years since the launch of the campaign – a million of visitors have viewed the website [60]. In the efforts to change behaviours, there is a great expectation of success adopting social media [55]; our figures show that these new social media should deserve more attention in the planning of forthcoming anti-stigma campaigns.

The present study has some limitations that must be acknowledged. This is a real-world study adopting a social marketing approach, in which it was not possible to randomize participants or to manipulate the intervention [61]. When a real-world study is planned, some limitations arise since it is not possible to strictly

"control" for the exposure to the treatment, and this is the reason we evaluated the impact of the campaign through a "proxy" measure, as being aware of the SMC-TTC. Moreover, we must acknowledge that the awareness of the campaign represents itself a source of bias in evaluating the impact of the campaign because some of the interviewed people could have missed the campaign advertisements, some other could not have paid attention to the campaign ads or could have recalled the advertisements of a different burst of the campaign. On the other hand, it has been well documented that the campaign works through an indirect effect on population level in terms of changing knowledge, attitudes and behaviour towards mental disorders [37]. It may be that our findings have been impacted by such indirect effects, considering that individuals may not recognize the campaign advertisement, but may have talked/discussed about the campaign with someone else who directly saw/heard about the campaign. Finally, considering that changing attitudes and behaviour is a time consuming process, the duration of the evaluation period should have been impacted on the present finding, and we could have missed some delayed effects of the campaign [53].

It has been claimed the need to end stigma and discrimination related to people with mental disorders and the research in this field has been prioritized by several associations of stakeholders and mental health professionals [62–65]. Considering such promising results obtained in England, together with the growing evidence in other European countries, it can be argued that social media can represent the possible way forward for the research in this field. The future on-going evaluation of the SMC-TTC may further shed light on the essential role of social media in challenging and reducing stigma and discrimination.

Disclosure of interest

Acknowledgments

Appendix A. Supplementary data

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.eurpsy.2016.08.008.

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